

THE JOURNAL OF MEDICAL EDUCATION

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With Our Authors

Adolph W. Schmidt

Medicine and the Liberal Arts. Mr. Schmidt is president and trustee of the A. W. Mellon Educational and Charitable Trust. This article is adapted from Mr. Schmidt's address at the Annual Banquet of the Association of American Medical Colleges, November 12, 1956, The Broadmoor, Colorado Springs, Colo. Mr. Schmidt is also chairman of the Board of Visitors and Governors of St. John's College, Annapolis, Md.

P. C. Reynell

The Individual Tutor System at Oxford. Dr. Reynell, a medical tutor at Oxford University Clinical school, is also a member of the staff of the Radcliffe Infirmary at the United Oxford Hospitals. Recently he described the Oxford tutorial system in a British journal and because of the growing interest in tutorial systems among United States medical educators, he was asked to prepare this article for the Journal of Medical Education.

Walter G. Klopfer

The Evaluation of Students by Their Peers. Dr. Klopfer received his Ph.D. degree from the University of California, Berkeley, in 1950. Following two years at the Duke University School of Medicine, he came to Nebraska as chief clinical psychologist at the Norfolk State Hospital and assistant professor of medical psychology at the University of Nebraska College of Medicine.

Chauncey D. Leake

Medical Education in the USSR. Dr. Leake received his Ph.D. from

the University of Wisconsin. He is presently the assistant dean and professor of pharmacology at the Ohio State University College of Medicine. Prior to this, he was director and professor of pharmacology at the University of Texas Medical Branch in Galveston. He is a former member of the Editorial Board of the Journal of Medical Education.

Goldsmith, Hess

Role of the Psychiatric Social Worker in Teaching Medical Students.

Dr. Jewett Goldsmith received his M.D. from the University of Maryland in 1942. He is presently assistant professor of psychiatry, Duke University School of Medicine. Until last August, he was director of the Psychiatric Out-patient Clinic, Duke Hospital.

Dolph Hess is presently executive director of Lee County Mental Health Center, Keokuk, Iowa. He received his M.S.W. degree from North Carolina in 1952, and was formerly P.S.W. Supervisor, 1954-56 at Duke University Hospital, Durham, North Carolina.

Israel E. Drabkin

Medical Education in Ancient Greece and Rome. Mr. Drabkin is associate professor of classical languages at The City College of New York. He is a graduate of that college, and holds the degree of Doctor of Philosophy from Columbia University. He is a member of the editorial boards of the journals *Isis* and *Centaurus*. This article is part of our History of Medical Education series.



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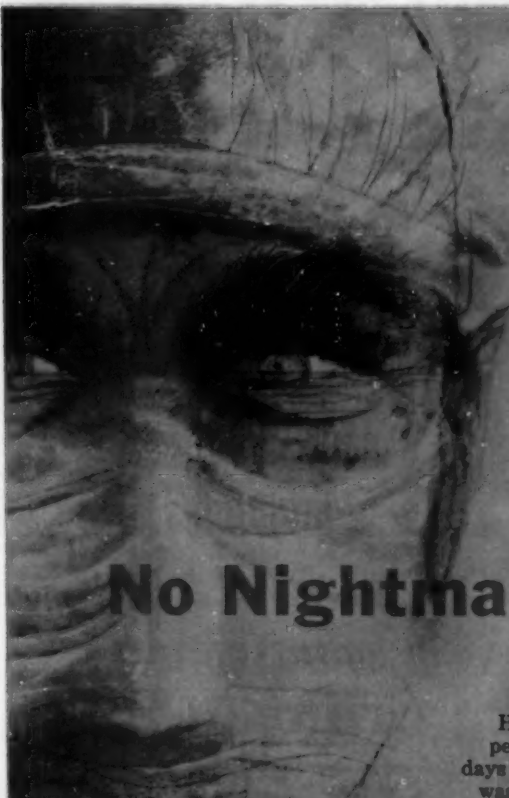
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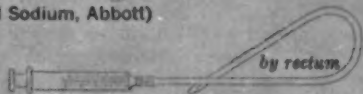
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*The American Foundation: Medical Research:
A Midcentury Survey, Boston, Little, Brown
and Company, 1955, vol. 1, p. XXXI.

***Ibid.*, p. 600.

Medicine and the Liberal Arts

ADOLPH W. SCHMIDT

MY ONLY qualification for discussing the liberal arts or any aspect of education is that the inadequacies of my own undergraduate experience were such that I decided to try to do something about it before the next generation of youngsters came along. Some 10 years out of graduate school I came to the conclusion that I was a very poorly educated person. Possibly some of you may at some point have also arrived at the same conclusion. I am told that this is a normal and healthy reaction for persons beginning to reach maturity. In my own case, I had not heard even the names of some of the great thinkers who have shaped the course of our Western tradition. At the Sorbonne the year after graduation, I can recall my embarrassment when I went one day to the professor to ask him more about the man to whom he had alluded importantly in his lecture—Montesquieu. I had to admit that never in all my preparatory school or college years had I heard of the man to whom our Constitution owes its pervasive principle of the separation of powers. And so it was with St. Augustine, Thomas Aquinas, Montaigne, Hobbes, Locke. I had read no Dante, Goethe, Marx, Freud.

Now when such a realization strikes home, there are two courses open. One is to blame oneself for having wasted his time, and the other is to blame the college. I could do neither, for I was interested in my studies and had worked hard.

I believe I had the advantage of the best curriculum in the United States in the middle 20's, taught by an able and distinguished faculty. I remain a loyal and devoted alumnus. I do blame the wide-open elective system which was prevalent in my day and the departmental system—that curse of specialization which has placed all knowledge in vertical water-tight compartments and prevented until recently any integration to take place on a horizontal level. With the leavening of time, I have grown to realize also that even with the most ideal curriculum, teaching and motivation during college years, one cannot become an educated man. The obstacle is inherent and insurmountable—namely, youth. This obstacle can obviously be overcome only by maturity, which begins after one has left the protection of university walls. The educational deficiencies of youth can be corrected only by continuing study throughout life. Thus, my own shortcomings in education have led me to two absorbing educational interests—St. John's College at Annapolis, Maryland, and a pioneering project in adult education, the Great Books Foundation.

The new program at St. John's College which was instituted in 1937 was part of the rebellion against the free elective system which had its beginnings in the late 1920's and early 1930's. Conservative manifestations of this rebellion could be found in the educational experi-

ments at the University of Chicago and Columbia College. So-called "progressive programs" were introduced at the girls' colleges—Bennington and Sarah Lawrence, and at Bard College, a co-educational institution. Other manifestations were the work-study program at Antioch.

In 1946, Harvard published its famous report on "General Education in a Free Society" which put the seal of respectability on many of the concepts of the revolutionary movement. There followed in 1947 drastic revisions of curricula at Harvard, Yale and Princeton involving mostly prescribed courses, distributed among the sciences, social studies and humanities in the first two years, and concentration through a departmental major in the last two years. Variations of this so-called "core curriculum" were adopted in the better colleges, notably at Amherst, while many other colleges and universities developed inter-departmental courses to cope with the difficult problem of integration. These were actually an extension of this movement and were known variously as Humanities Programs, Western Civilization Programs and Honors Programs. But nowhere—except at St. John's—could any institution come to grips with the sacrosanct departmental system. There they abolished it entirely.

St. John's Program

Since it has some bearing on our topic this evening, and since I know it best, I should like to tell you something about the St. John's program. First of all, it is a four-year, fixed curriculum with no electives. Second, there are no text-books. Rather than studying what some professor thinks Plato or Aristotle said, the student reads more than

100 of the great books of our cultural heritage himself, in English translation where necessary, and forms his own opinions. Many of these books deal with mathematics and science, and it may surprise many of you to know that St. John's has more required mathematics and laboratory science than any other liberal arts college in the country. Graduates enter medical schools usually with the addition of only a summer course in organic chemistry. Although the authors of these great books are the real teachers in the curriculum, undergraduate teaching is here all-important, and method ranks equally with content. The emphasis is on *E-Duco*—lead out from, draw out from the student—and it is unusual for a teacher to give an answer. The job of the teacher is to make the student give his own answer by the teacher's skill in questioning. There are no lectures in the usual sense. The seminar is the heart of the method, involving rational questioning and discussion and the supporting of every opinion by argument. There are daily tutorials in language and mathematics. In addition to precise work in writing and reading English, there are two years of Greek, and one each of German and French. In mathematics, the student proceeds from the use of numbers to the modern form of the differential and integral calculus.

Perhaps the most obvious distinctive mark of St. John's is the fact that all the students of the same year are reading the same books at the same time with the same immediate preparation. This may be the week when all freshmen are reading the first assignment in Thucydides, with the seminar leaders wondering if the students will get the implications of liberty in

Pericles' funeral oration; or the period when all juniors are being introduced to the intellectual revolution which René Descartes loosed in Europe some 300 years ago through the arts of analytical mathematics. As a result, students can define their terms accurately with one another, and discussions in coffee shop and dormitory become an important part of the educational process.

I have described this course of study at some length since it was designed to rehabilitate the name and meaning of a liberal arts curriculum. It has balance and integration. It is the modern equivalent of the seven ancient liberal arts—the trivium of grammar, rhetoric, logic and the quadrivium of arithmetic, music, geometry and astronomy, which for more than 2000 years, up to the beginning of the 19th century, were the backbone of all formal education. The interpretation and the content of these arts, their number and mutual relationship, changed with the ages. But whatever the guises they assumed, they were always meant, and are still meant, to have one primary function: with them and through them men can learn how to go about the business of understanding. They represent those basic disciplines which have kept the mind of man free to think, to reason and to explore. The liberal arts enable men to win knowledge of the world around them and knowledge of themselves in this world. Under their guidance, men can free themselves from the wantonness of prejudice and the narrowness of beaten paths. Under their discipline men can acquire the habit of listening to reason.

The physician of antiquity was liberally educated. It was a dis-

cerning application of the philosophies and disciplines and procedures which we now call the liberal arts which made him the first man of science. Modern science derives the logic of its methodology from the liberal arts. Hippocrates and Galen could not observe the internal functions and operations of the body organs. Lack of instruments and lack of laboratory may have given them insufficient data, but the liberating disciplines which they did know made more penetrating their observations and speculations, and set a pattern which insured that progress could come as fast as new evidence appeared, and that when evidence should accumulate, no power on earth—neither Emperor, nor Pope, nor the vested interests of the elders of an organized profession—could stem the advance for very long.

II

Now it is at this point that I become aware of my possible presumption in accepting your president's invitation. He knew my convictions on the liberal arts. I felt that these were coals which possibly needed to be carried to this meeting. But I did not know that this was Newcastle.

Fortunately, I took the precaution to browse in the literature and among the writings of Sir William Osler, I read "The Old Humanities and the New Science," Osler's presidential address delivered before the Classical Association in 1919 at Oxford, that eloquent statement for the need of educated scientists as well as for the new science to be esteemed as a liberal discipline. Not only did I find that Sir William had said most of the things I would like to say, but almost all the things you and your colleagues have said in papers since that time. I found an

obstetrician, Van Wyck, speaking to the 1950 annual dinner of the Royal College of Physicians and Surgeons of Canada on "The Role of the Humanities in Medical Education," (*Canada MAJ* 254-260). I found a surgeon, Elkin, in a 1952 presidential address before the American Surgical Association, stating "A Case for the Study of the Humanities in the Making of a Doctor" (*Annals of Surgery* 136: 337). In 1953 I found the first World Conference on Medical Education in London giving extensive attention to general education in an age of science with five distinguished papers and discussions on that subject.

I found, also, the 1953 Report of the Subcommittee on Preprofessional Education of the Survey of Medical Education entitled "Preparation for Medical Education in the Liberal Arts College," in which Dr. Severinghaus and Dean Carman of Columbia, and Dean Cadbury of Haverford collaborated. It said many things I would be proud to say and so well that it may be regarded as the definitive work on this subject.

From these and other sources I turned to the catalogues of some 60 medical schools. Invariably, the required courses for admission were biology, chemistry, physics and English, followed by these typical excerpts about requirements:

The University of Louisville prefers a bachelor's degree from a liberal arts college and goes on to say that "the biological basis for medical practice is traditional for the obvious reason that medicine in its technical aspects is an applied biological science. But attention to science courses should not be exclusive. In no profession are human relationships and an understanding of human nature more important."

Columbia not only mentions the social sciences and the humanities but says, "The importance of a broad liberal education cannot be over-emphasized. The practice of medicine is both a science and an art and to treat the patient as a whole man, the doctor must be a whole man himself."

The University of Pennsylvania states that "It is the opinion of the Admissions Committee that the prospective medical student does not increase his desirability as a student by taking a large number of highly specialized science courses in college at the expense of a broader educational background."

In similar manner, the University of California at Los Angeles states "Preference will not be given to students who major in the natural sciences. Courses in the medical sciences or in very closely related fields are undesirable since not only will such work be covered adequately in the school of medicine, but also its inclusion displaces courses that would contribute to the student's broad education."

I could continue to quote excerpts in similar vein from most of the medical college bulletins.

Not only have able men in your profession said the things that I might have said, but they have said them sufficiently often and well that their good advice has been incorporated into the medical school bulletins for the guidance of students contemplating entrance. You can see what I mean about carrying coals to Newcastle.

III

Then I began to reflect a bit on what my own college catalogue had said about turning out educated men. I also recalled that Catholics and Protestants, the ancient Hebrew prophets and the Moslem con-

querors, were never more eloquent about the love of God than when they were persecuting *men*. On a mundane level, I have noted that the attractive ladies who are always riding in motor cars in the automobile advertisements are never delivered when one buys the car. Perhaps, thought I, there is a difference between word and deed. So I turned back to some of the articles which I cited a little earlier. Elkin, in his address four years ago, said:

"This poverty of education in the humanities is no pipe dream of mine. Here is an actual analysis of the major subjects of some 13,000 applicants to medical schools who took the professional aptitude test: 44 per cent majored in the biological sciences; 26.4 per cent in chemistry; 11.3 per cent in pre-medicine, whatever that was, but my guess would be a science major with a two-quarter history survey; 6 per cent in other science curricula; 5.7 per cent were unclassified (though I doubt if any of these managed to get into medical school without some kind of 'classification'), and that leaves exactly 6.6 per cent, which was divided between the humanities: 3.8 per cent, and psychology: 2.8 per cent."

Elkin continues: "Why does this happen? Students believe not only that they will have a better chance of entering medical school but that they will have less difficulty once they are in, and in this they have been encouraged by the medical schools themselves and by their college advisers who have perhaps thoughtlessly guided them into these programs because they thought medicine was a science only."

Your own Association recently sampled 560 fourth-year medical students graduating in June 1956. In response to the question "Would more em-

phasis on the humanities and social sciences have been helpful?" 71 per cent replied Yes. In the same questionnaire, 62 per cent of the fourth-year medical students reported that they experienced deficiencies in the humanities, and 77 per cent reported deficiencies in the social sciences as a result of their undergraduate electives and their medical school experience.

In order to determine the attitude and opinion of the colleges, I wrote a number of presidents of liberal arts colleges and asked: "Is this search by the medical schools for students broadly trained in the liberal arts one of those things unveiled in speeches before medical conferences or is it genuine? In recommending students to medical schools or in advising them (with a wary eye for how well they will do and how likely they are to get in), what has been your experience?"

On the whole, the medical schools come out neither well nor badly. Here are a few quotations commenting upon your admissions policies, as presidents of first-rate liberal arts colleges see them:

"From our experience in dealing with medical school admissions officers, it is our belief that they are primarily interested in men with high intellectual capacity and with personalities that give promise of making good physicians. We haven't found that they discriminate either for or against the science major."

Another adds: "As the competition gets close, however, I get the feeling that the amount and quality of science is given a harder and harder look."

Another president writes: "I am prepared to believe that most of our medical educators are still talking a better game than they are playing in their emphasis on the humanities and

social sciences as pre-requisites."

Another letter says, "While the medical schools advocate a broad general liberal arts training, the admissions officers are quite apt to insist on so many hours of biology and so many hours of lab, and the same for chemistry and physics and they tend to be fairly rigid on these points." He goes on to say, "I do think there has been a slight trend toward less rigidity in the last few years."

One medical catalogue, that of Johns Hopkins for the year 1955-1956 made not the slightest curtesy in the direction of the liberal arts and even recommended collateral advanced science courses. Several educators with whom I talked held the opinion that the only difference between the Johns Hopkins catalogue and the others was that Hopkins was honestly describing the world as it is and some of the others were delivering cultural sermons.

IV

This presents an interesting paradox. What kind of applicant do the medical schools truly want? Should future physicians be liberally educated before they begin their professional work, or has the knowledge to be acquired grown so voluminous and so complex that specialization must begin in the early college years? Engineering and business have been facing up to this same question. Leading graduate schools of business administration have taken the cue from industrial leaders in declaring unreservedly for the liberally educated graduate. Engineering schools are experimenting with many methods for fusing liberal studies into the engineering curriculum. At this juncture it seems to me that the medical colleges have an opportunity not only to design the kind of education which they believe best for our future physicians, but also to upgrade

the entire quality and character of our educational system.

With the exception of a few score of the better colleges, some of which I have named, the educational revolt previously described has not made much headway in the great majority of our educational institutions. In our great state universities, in our land grant colleges, in the state teachers colleges, in junior colleges, the curriculum continues to be not only widely elective, but because of the pressures of both parents and students, appears to be increasingly vocational. I have examined closely the catalogues of most of the liberal arts colleges in our tri-state area, and with a few notable exceptions, most of these schools should change the sign over their door to "Vocational Training Institution." In addition, there is everywhere a concentrated study of contemporary issues and courses designed to bring about complete personal adjustment between the individual student and his immediate environment. I can imagine no more perfect curriculum to prepare a student to take his or her place in a completely static society. But we live in the most dynamic and rapidly changing society the world has ever seen.

No one has to go to school in order to learn how to make a living. We need institutions of higher learning to train men for the learned professions, but the basic tasks of an industrial society can be best learned on the job. Vocational training is training for work or for the life of a slave. It is not the education of the future citizen, of the free man who has leisure to use. Liberal education, as distinguished from vocational training, is education for freedom, and this means that it is education for the responsibilities of citizenship and for the good use of leisure. I feel

strongly that unless the educators of the country can make a liberal education available to a larger and larger percentage of our population, by the development of educational equivalents for students of varying ability, we must become concerned about the future of democracy. For as issues become more complex, we are certain to have new Caesars exhort the electorate to turn their troubles over to them. Let us remember what happened to the learned specialists turned out by the German universities as well as the admonition of Thomas Jefferson that democracy can only be sustained by an educated citizenry. And he meant a liberally educated citizenry.

I suggest, therefore, that the medical colleges of the country require for admission twice as many subjects in the humanities and in the social studies as they now do in the natural sciences. They would thereby give direction and purpose to the recommendations contained in their own bulletins regarding the liberal arts. Otherwise, they will continue to be open to the accusation by college advisers and applicants that they do not mean what they say.

In retrospect, this inexperienced youth of 17 coming to his college campus for the first time wishes that the faculty had said to him—*young man, here are the things we believe an educated man should know, and here are the subjects which you will study during the next four years if you wish a degree from this institution; in fact, here is a common body of knowledge which is known by educated men everywhere, and which will enable you to converse with them wherever they may be found. After you leave these walls, specialize to your heart's content in any field of endeavor which appeals to you. But until you have gained a*

solid, balanced education in the liberal arts we will not permit you to specialize or major in any subject or any field.

If anyone regards this view of education as unduly authoritarian, I appeal to the analogy between education and medicine. Both are cooperative rather than productive arts, each merely assisting natural processes. If an ailing person can take care of himself, he does not go to a doctor. Diagnosis and prescription are the functions of the physician, not the patient. In the same manner, if educators possess the knowledge which should be learned by the student, and the skill to help him learn it, they can perform their task properly only if they exercise that authority which is properly theirs by reason of knowledge and skill. They must be leaders, not followers; they must show the way. The elective system is shown to be fantastic by comparison with medical practice.

If the medical colleges could go so far as to require a balanced, integrated program in the liberal arts for the entire four undergraduate years of college, including as much of the biological and physical sciences as needed, I believe it would do more to improve the quality of education in this country than anything I know. It would be of inestimable value to the medical student himself. It would begin to insure the kind of preparation the medical colleges *say* they prefer. It would encourage other professional schools to re-examine their own needs and hopefully to do likewise. Finally, it would cause a multitude of college educators and administrators to re-examine and re-define their educational goals. What a salutary effect this might have on their own curricula as well as on the secondary schools by upgrading the requirements for admission. Such re-

study and re-examination may come sooner than we think if it becomes necessary to compress the 12 years of secondary, college and medical schooling into 10 or nine years because of the length of military service.

I cherish on my desk a medallion, presented by the Medical Society of the State of Pennsylvania, bearing the inscription of Benjamin Rush. Physician, signer of the Declaration of Independence and the Constitution of the United States, member of Congress, Treasurer of the United States Mint, University of Pennsylvania Professor of the Theory and Practice of Medicine, here was a companion of that remarkable group of men which included Washington, Jefferson, Hamilton, Madison—all of whom were educated in and by the liberal arts. Is it too much to hope that the liberal arts and medicine can combine in our present day to produce future citizen physicians for America of the stature of Benjamin Rush?

La Medicina y las Artes Liberales

Este trabajo es un discurso pronunciado por Adolph W. Schmidt, el 12 de noviembre de 1956, en Colorado Springs, ante la *Association of American Medical Colleges*. El autor lamenta la carencia de una educación en Humanidades, de que adolece la instrucción universitaria moderna, para los estudiantes de Medicina y Ciencias, y proclama la necesidad, para éstos como para todos los hombres educados, de adquirir un fondo de cultura general. Entre los esfuerzos que en ese sentido han sido llevados a cabo por las Universidades americanas, se destaca un programa de instrucción introducido en 1937 en St. John's College, el cual es descrito detalladamente por el autor; así como los experimentos pedagógicos de la Univ. de Chicago y de Columbia College, y los llamados "programas progresivos" de Bennington, Sarah Lawrence y Bard College.

En 1946, Harvard publicó su famoso informe sobre "General Education in a Free Society", el cual puso sello de respetabilidad a muchos conceptos que hasta entonces se consideraron "revolucionarios". Ese manifiesto tuvo por consecuencia revisiones drásticas en los programas de Harvard, Yale, Princeton, Amherst, y de varias otras Universidades. Mas a pesar de esos esfuerzos para hacer estudiar cursos de Humanidades a los estudiantes pre-médicos, el hecho es, dice el autor, que, según un reciente análisis estadístico, de 13,000 candidatos para la admisión a las Escuelas de Medicina, el 44% de éstos se había dedicado principalmente a las ciencias biológicas; el 26.4%, a la Química; el 11.3% a algo llamado "Pre-Medicina" (que el autor supone consistía, principalmente, en Ciencias básicas mezcladas con un poco de Historia); el 6% a otras Ciencias, y sólo un 3.8% a las Humanidades, y un 2.8% a la Psicología. Aunque algunas Escuelas de Medicina, como la de la Univ. de California, en Los Angeles, han declarado explícitamente que no darán preferencia a estudiantes que tengan un "mayor" en Ciencias naturales, los estudiantes que quieren dedicarse a la Medicina continúan, al parecer, pensando que un estudio exclusivo de las Ciencias básicas, en su educación pre-médica, sería de gran ventaja para ellos. Para remediar esa situación, el autor propone que los Colegios de Medicina den el paso radical de requerir, como una condición de admisión, que los candidatos hayan cursado un *curriculum* integrado en las Artes Liberales durante los 4 años de *College*, y que se incluyan las Ciencias biológicas y físicas tan sólo en la medida que esto sea necesario como base de los estudios de Medicina. Tal medida, cree el autor, "contribuiría más que ninguna otra a mejorar la calidad de la educación en este país. Sería de valor inestimable para el estudiante médico mismo; sería un principio para asegurar esa clase de preparación que los Colegios de Medicina dicen que prefieren; y estimularía a otras Escuelas profesionales a volver a examinar y a definir sus fines educacionales. ¿Y qué efecto saludable tendría esto en el programa de esas Escuelas y también en los Escuelas Secundarias...!"

Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un mínimo de 25 lectores.

Role of the Psychiatric Social Worker in Teaching Medical Students*

JEWETT GOLDSMITH AND DOLPH HESS

THE PURPOSE of this paper is to report on one aspect of a teaching program devised for fourth-year medical students in the psychiatric out-patient clinic of a university hospital.

As the curriculum presently is set up, the students report to the clinic in small groups, each student spending one afternoon per week in the clinic over an 11-week quarter.

The clinic is one which renders diagnostic and therapeutic services to patients referred from other clinics and wards in the hospital and from the community. It operates on the clinical team plan, using psychiatrists, psychologists and psychiatric social workers in the total diagnostic and therapeutic approach.

Social worker's team functions

The psychiatric social worker functions in the team as intake interviewer with patients and relatives, in continuing casework with relatives when this is deemed indicated in the total therapeutic approach to the patient, and in a liaison relationship with community social service agencies.

It is in this setting that the goal of medical school teaching is conceived of as the presentation of those

aspects of psychiatry that will be useful to them in their roles as general practitioners of medicine; consisting of interviewing techniques, diagnostic and elementary psychodynamic evaluation, selection of acute psychoneurotic patients for simple psychotherapy that can be done by a general practitioner, techniques of simple psychotherapy, the use of community resources, referral procedures, understanding of the operation of a psychiatric clinic, and above all, the recognition of the patient as a member of a community reacting to internal and external environmental forces impinging upon him.

This requires that the student be given the opportunity to develop attitudes toward patients, as people with problems, which are all too frequently absent in senior medical students, as well as special skills and a body of knowledge.

The integrated team approach is presented to the students in staff conference presentations in which they participate. Here diagnostic, psychodynamic and psychotherapeutic considerations are dealt with. The relationship of social and environmental factors to emotional illness is delineated and the use of community resources demonstrated with relation to individual patients considered.

In addition, each discipline represented on the team has time with the students, during which instruction is

*Read at 112th annual meeting of the American Psychiatric Association, Chicago, Illinois, April 30-May 4, 1956.

offered in the particular area of competence of that discipline. The teaching areas of the psychiatrists and psychologists are comparatively easily defined. The psychiatrist teaches clinical psychiatric diagnosis, and elementary psychotherapy. The psychologist presents the uses, significance and techniques of psychological test procedures.

The role of the psychiatric social worker in medical school teaching has, in the past, been less well defined.

A perusal of the literature indicates that psychiatric social workers have imparted to medical students a knowledge of the social structure of the community and its implications upon the adjustment problems of patients, at times by presenting a thorough review of some of the resources that society has established to help individuals face problems of social adjustment. In other places psychiatric social workers have participated in group-process teaching, and in still others the relationship between social and environmental forces and mental health has been presented by the study of family relationships in Family Care programs involving medical social workers. (1, 2, 3, 4, 5, 6, 7, 8)

In planning this study of the most effective manner in which a psychiatric social worker could function in the medical school teaching setting, the decision was reached that for maximum effectiveness the teaching role would have to be closely related to the role in which the social worker functions as a member of the service team of the clinic. (This is no less true for the psychiatrist and the psychologist.)

It then became necessary to examine in detail the service function of the psychiatric social worker as he operates as a member of the clinical

team, and the particular attitudes, skills and areas of competence that these imply.

Secondary problems of patient

When a patient is referred to a psychiatric clinic he brings with him, in addition to the problem for which he was referred, a group of problems that are secondary to the referral.

He has doubts concerning his need for psychiatric help, misunderstandings concerning the implications of the psychiatric referral, and hostilities arising from these misunderstandings. He is concerned about the stigma frequently associated with psychiatric treatment and usually afraid of the unknown process of the psychiatric evaluation and psychotherapy. Above all, he is ambivalent and resistant toward the idea of coming finally to grips with his problems.

If the psychiatric contact is to be helpfully meaningful, these problems must be verbalized, examined with professional help, clarified and resolved. (Rarely is this done prior to the referral.)

In order that this may be accomplished, the patient's initial contact must be with a person prepared to accept him with his doubts and fears and hostilities and misunderstandings, help him to examine them realistically and to clarify them.

General function of worker

The general function of a psychiatric social worker is to help people find new and more effective ways of dealing with reality problems—that is, with failures of individual adjustment patterns to cope with well-defined problem areas in the environment. He has spent much time studying the conflicts aroused within

individuals when they find themselves unable to handle problems by means of their own inner resources and consider application to an outside source for help. He is, therefore, particularly fitted to act as an intake worker in dealing with the problems of the referral.

The function of the worker in the intake process, however, is not restricted to contact with the patient. Traditionally, he has worked with the patient's relatives. Originally, his purpose was to obtain a collateral history of the patient's illness. This has expanded with the addition of evaluation of the relative-patient relationship, which is one of the most important environmental factors in a patient's emotional illness.

The conflicts in this relationship are, however, not restricted to the patient. The relative has also been emotionally affected by the patient's illness and has developed, at times, conflicting feelings about it.

Now, if the relative is to give a meaningful history, he must be comfortable with the facts, and if he is not, he also must feel that he is getting the opportunity to use his interview to obtain help with the feelings he has about the facts he must reveal.

That this may be accomplished requires the same acceptance and help that must be afforded the referred patient.

In many cases, requirements of the total therapeutic approach to the patient dictate that the helping relationship between psychiatric social worker and relative continue in case-work beyond the intake contacts. This will occur in situations in which it is clear that emotional stress in the relative-patient relationship is a predominant factor in the patient's illness. Although, if treatment is to be successful, the patient will have to find more satisfactory ways of han-

dling this emotional stress, this process can be considerably facilitated if modification can be made at both ends of the patient-relative axis.

The psychiatric social worker has a unique role here. Since the psychiatrist places his emotional investment in his patient, he cannot offer to the relative, too, the acceptance and objective view that is necessary if modification of feelings toward the patient and more efficient ways of dealing with these feelings are to be accomplished. Here the psychiatric social worker is able to do an important job around the reality problems of the relative and thus facilitate the entire psychotherapeutic approach to the patient.

Knowledge of agencies

Very often the evaluation of patients in a clinic reveals that the services of community social service agencies are indicated either as an aid to, or in lieu of, psychiatric therapy. The social worker's knowledge of the agencies that exist, the specialized services that they perform and the considerations incident to referral to them serves in the total therapeutic disposition of the patient.

Worker helps students

Now, the question arises: In what way can the competence, skills and attitudes inherent in the functions of the psychiatric social worker be useful to medical students preparing for a career as general practitioners of medicine? Patient and relative needs are really no different in the settings of a psychiatric clinic and the general practitioner's office. The same need exists for the preparation of patients for specialist referral (psychiatric and otherwise); the same need exists for dealing with relatives' anxieties

Role of the Psychiatric Social Worker

and concerns with regard to patients' illnesses; the same need exists for adequate social histories and for dealing with family inter-relationships as they affect the welfare of the patient; and the same need exists for awareness of the existence in the community of helping agencies and how they can best be used.

Since it is the rare general practitioner indeed who has a social worker to handle these problems for him, it is necessary that some of the functions that are delegated to the psychiatric social worker in the psychiatric clinical team must be handled when they arise in the general practice setting by the physician himself. He must, therefore, have at his disposal some of the skills and attitudes of the psychiatric social worker; and since these skills *are* within the particular area of competence of the social worker, it is to him that the job of transmitting them to medical students falls.

Teaching methodology

Teaching methodology must next be considered, and many approaches have been used.

The first method used is the demonstration of the role of the psychiatric social worker and the result of his work by the social work presentation in the team teaching conference in which all patients are considered, and the three disciplines represented on the team contribute to the total evaluation of the patient and his social milieu.

It has been found that best results are obtained by presenting the material in such a manner that it accentuates some of the process that occurs during interviews with patients and relatives. This has been found to be a meaningful way to

demonstrate to the student the ever-present ambivalence that the patient exhibits toward psychiatric therapy, and the need that he has to be permitted to express and resolve his feelings. Similarly, it is also a way of showing clearly the anxieties of a relative of a psychiatric patient, the personality of the relative and its bearing upon the patient's psychiatric illness. When the psychiatric social worker participates in the discussion by stressing this point of view, it not only gives a better picture of the patient's problem, but also demonstrates, in a realistic manner, the need for this viewpoint if the patient is to be treated effectively. Furthermore, the teaching conference is an ideal situation in which to demonstrate the concept of the therapeutic team approach.

At the beginning of the study the psychiatric social worker was also assigned periods of didactic teaching chiefly concerning community resources, their function and how they might best be used. However, it rapidly became apparent that this could be presented in a much more interesting and effective way by relating it to dispositional considerations with regard to individual patients, and so the didactic lecture method has been abandoned.

Let students see relatives of patients

An extremely helpful method of permitting a student to learn how to deal with the emotional problems of the relative-patient relationship has been to assign to the student the task of seeing a relative in what amounts to continuing casework interviews, under the supervision of the psychiatric social worker. In this way the student is afforded a practical experience in offering help with problems of adjustment to a particular circum-

scribed relationship and an appreciation of the skills and attitudes needed. If any one of the methods described herein can be considered more effective than any of the others, this one must be considered the most effective method.

At times it has not always been possible, because of time limitations, to assign relatives to students for casework follow-up. When this has occurred, another method of teaching students the skills required, both to help a patient decide whether he wants psychiatric treatment, and to help relatives in their relationship with patients, has been by permitting them to witness actual interviews behind a one-way screen. This also serves as an effective method of demonstrating some of the problems that arise when one attempts to obtain historical data from relatives. Such demonstrations are always followed by class discussion, which permits the students to consolidate and understand the new insight into the relationships thus observed.

They are also able in this way to recognize the need that relatives have for help in dealing emotionally with the illness of a member of the family.

At times a teaching technique that has been used is that of having the student interview relatives or patients behind a one-way screen in view of his peers. Though this is potentially threatening to the students doing the interviewing, this method, and the discussion which invariably follows, permits of an even greater awareness of some of the problem areas involved in interviewing by being able to contrast student interviews with those of a skilled interviewer. This also calls to the student's attention his need to develop special skills if he is to handle such contacts satisfactorily.

Moderator

A completely incidental function of the psychiatric social worker in the teaching of medical students, which developed rather spontaneously from student contact, was that of "moderator" of what amount to "bull sessions," at which students are able to express their feelings—frequently hostile and frequently anxious—concerning the whole psychiatric approach and psychiatry in general. This appeared easier for them to discuss with psychiatric social workers than directly with psychiatrists. During these sessions it has been very often possible to help students become aware of some of the threatening aspects that psychiatric concepts presented to them, and by helping them recognize these and resolve their feelings concerning them, make more meaningful the integration of psychiatric knowledge into their total medical knowledge.

The effectiveness of a teaching program such as this is extremely difficult to evaluate, because, though skills and knowledge are easily tested, attitudes are not. At present the clinical psychologists working in the clinic are attempting to devise instruments for attitudinal evaluation. However, until they are successful, such evaluation can only be done by inference.

That new and different attitudes are involved is made unmistakable from the fact that this teaching approach, emphasizing as it has, among other things, the need to accept emotional responses to illnesses of patients in the patients' relatives and to help them deal with these, has evoked a certain amount of hostility and resentment on the part of the students. They have expressed resentment over "treating the relative like a patient," so that it has been necessary very

carefully to discuss the importance of emotional responses in all people. It is therefore believed that even this hostile response is advantageous, because, as it is resolved, the student achieves a keener awareness of the necessity of accepting emotional conflict in all people, whether or not they be psychiatric patients, and leads to greater appreciation of the fact that patients are people with problems.

Summary

In summary, then, the role of the psychiatric social worker in teaching medical students is defined by examining his role as a member of the therapeutic team, the skills, attitudes and areas of competence demanded by that role and an evaluation of the usefulness of such skills to the medical student if he is later to function as an adequate member of the practicing medical community. In presenting the material thus defined, the most meaningful methods have been those which make the most use of direct patient or relative contact, with decreasing effectiveness as one moves down the scale from direct contact through demonstration interviews, case material presentations, and didactic lectures.

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El papel del "Social Worker" en la enseñanza de la Psiquiatría

Este trabajo es un informe sobre un programa de enseñanza de Psiquiatría clínica para estudiantes de cuarto año en Duke University, con énfasis especial en el papel del empleado de la Asistencia Social (*social worker*) en la diagnosis y terapia de pacientes externos del Hospital universitario. El "social worker" psiquiátrico se incorpora, según dicho programa, a los grupos de trabajo de estudiantes, psiquiatras y psicólogos, y es su función principal llevar a cabo las entrevistas iniciales con los pacientes y sus familiares; mantener contacto con éstos últimos cuando así se considere necesario para fines terapéuticos, y establecer enlace con las Agencias de Servicio Social de la comunidad. Se describen detalladamente en este artículo los métodos y técnicas aplicados en este sistema de enseñanza, y se discute su valor didáctico y práctico para los estudiantes.

Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

Medical Education in the U.S.S.R.

CHAUNCEY LEAKE

RUSSIAN MEDICAL EDUCATION, like everything else Russian, is different. Whether or not anything helpful may be gained from a consideration of medical education in the USSR is doubtful, since one's reactions are likely to be colored so much by one's emotional feelings. It is not easy to give an accurate account of medical education in Russia, since it is not described in detail in any easily obtainable source, and it is not possible to get much of an idea of the way in which it works except by long contact and familiarity.

In August 1956, following the Brussels International Congress of Physiology, four American physiologists went to Russia, for a week each in Leningrad and Moscow, to study the physiology institutes and laboratories in those two cities. The group included Dr. Wallace O. Fenn of the University of Rochester, Dr. C. F. Schmidt of the University of Pennsylvania, and Dr. F. A. Hitchcock and myself of Ohio State University.

Unofficial trip

Our trip was not an official one, nor did the Russian physiologists know that we were coming. Accordingly arrangements had to be made on the spot in Leningrad and Moscow for visits to the different physiology laboratories. Arrangements for these visits were made promptly through

Intourist, and we were courteously received by all in charge. There seemed to be no restrictions upon our movements, or upon what we might wish to see. Leningrad and Moscow are large and growing, with broad tree-lined boulevards, and with determined orderly crowds of people. Rather on the starchy side, the people are conventionally dressed, with little attention paid to such nonessentials as clothes-pressing, shoe-shining, or make-up.

In order to understand current Russian medical education, it is necessary to give some consideration to the educational program in general. This is one of the major undertakings of the state, and of course is part of the over-all effort at conditioning the people for willing participation in the orthodoxy of Marxism-Leninism. This effort at conditioning is itself an important consequence of the prevailing Pavlovian physiology, which is practically canonical.

Science training emphasized

The general Russian educational system is geared for training in science. This begins in the primary schools, continues through the secondary schools, and is especially emphasized in the universities and in graduate instruction including medicine. Children begin their conditioning practically at birth. Infants are

cared for in nurseries, while the mothers return to work as quickly as possible. Children are well tended, well fed, and would seem to be spoiled by our standards. They quickly learn to take care of themselves, to adjust in a general social group, and soon they are learning to sing, play games, and to undertake group activities. A sort of kindergarten comes when they are about four or five. The children go to the schools which are close to, or may be a part of, the big apartment houses, and are taken home by their parents in the afternoon and evening.

The four-year primary school is entered at seven, and teaching is quite conventional except that about one third of the time is spent on scientific studies, including mathematics and biology.

Competition in schooling begins when children are around 12 or 13, at the conclusion of the primary school. If their work has been of a high intellectual nature they may go on to the general secondary school requiring six years, with the same curriculum for all students. Nearly half of instruction now is concerned with science. Those who do not have the intellectual qualifications for secondary schooling go to vocational schools, where courses are given for apprenticeship in factory work, or if some skill is shown, for a three-year technical course training craftsmen or technicians. There are repeated competitive examinations in the general secondary schools, and any student whose scholastic ability is not up to standard may have to drop out for apprentice or technical training in accordance with demonstrated ability. However if such a student studies on the side, and can show the ability to go back to school, this may be done by passing an appropriate examination. It is highly probable that in all

this system, the general *blat*, permeating every phase of Russian life, may operate. This is "fixing." It is very likely that *blat* can get special arrangements for certain students, if parents or others are able to do the necessary "fixing."

Higher education

The higher educational system in Russia comprises some 33 universities, located in the larger cities, and in the capitals of the 16 republics. These universities produce most of the scientists in the special graduate courses. They also maintain research laboratories in the various scientific fields, and in the humanities. There are then some 800 specialized schools for professional training, including about 80 in medicine, 300 in pedagogy, 150 in engineering, 61 in agriculture, 50 in arts, 40 in economics, and 40 in veterinary medicine. Some of these professional schools, as in arts and economics, may be associated with the universities. *The medical schools, however, are wholly independent of the universities, and are under the Ministry of Health.* Moscow has two medical schools, and the rest are scattered throughout the whole country, located in the major cities and in the capitals. The medical schools are usually called medical institutes, but they do not feature research.

The medical schools are expanding, and there has been a rapid rise in the number of graduates in the past four years. In 1955 there were 25,000 graduates from the medical schools of Russia, as compared with 8,000 in the United States. In another year or so there may be even more graduates in medicine in the USSR than in the United States, due to the new medical schools which have recently been established, and to the increase in the

number of medical students admitted.

Admission to Soviet medical schools is on the basis of competitive examination, after two years of general collegiate training, with emphasis on physics, chemistry, and biology. Relatively large classes are admitted. These may vary from 200 to 1000, depending on the location of the medical school. There is rapid elimination, as a result of competitive examinations at the end of each course. Those who drop out receive technical training, appropriate to their background, and may then apply for technical positions. The heavy scholastic attrition results in graduating from medical schools about two-thirds of those who enter.

"Intellectual salvage"

The intellectual salvage of students in training is an interesting feature of the whole Russian educational system. In medicine those who drop out at any time may apply at once for technical positions in the health fields for which their past training may have qualified them. They thus may become laboratory assistants and technicians, if they have flunked out during the preclinical years of training. If they flunk out during their clinical years, they may apply for positions as hospital attendants or ward or operating room assistants. These various positions seem to be on a civil service program, so that application is made for a position for which one may feel qualified. If the examination for the position is passed, the individual may then be placed wherever there is an opening, anywhere in the country. Further, such an individual may, by independent study, qualify again for admission to medical studies, and come back into the class for which his intelligence may qualify him. It should be said at once that there are just as many

women in medicine as men, and the number of laboratory technologists and hospital attendants is large and seems to be predominantly women. It is not clear whether there is a separate nursing profession, organized in the same way as ours. The hospital attendants seem to give maid, nursing, and technical service.

There are other forms of health training. Some of those who drop out early in preclinical work, or some who may wish to apply from secondary schools, may enter special training schools for "felchers," who are rural practitioners, with an abbreviated practical medical training. This group is derived from the German *Feldärzte*. Again those who are in this group may by independent study qualify themselves for entrance to a regular medical school, and continue training there until they become regular physicians. In addition, there is a special curriculum for sanitarians, who comprise about one-third of the medical school graduates.

There are special schools for midwives. Entrance to these schools may come on completion of secondary school training. Midwives seem to be trained especially for service in isolated and rural areas. These are exclusively women.

Rigorous training

While the Russians do everything slowly and quite methodically, the medical training is nevertheless rigorous. The leading teachers in the medical schools seem to be recruited from the staffs of the research institutes. Thus most of the preclinical teaching seems to be done by the anatomists and physiologists from the many large research institutes in these fields. Clinical instruction seems to be offered chiefly by those holding hospital appointments or who work in the clinical research institutes. These are the special lecturers and

the cream of the teaching group. They are invited to give lectures on the basis of their reputations and contributions. The bulk of the teaching is probably done by those who have completed graduate work in the pre-clinical sciences, and by younger men in residency training in the clinical fields. These teachers probably are required to get special training in one of the pedagogical institutes.

The Russians require that teachers show first satisfactory evidence of proficiency in the content of the subject which they expect to teach. When they have passed this kind of a test, they then are allowed to go for six months or a year to a pedagogical institute, in order to learn how to teach. *There is a reluctance to say much about the pedagogical institutes.* They are probably the places where indoctrination occurs in connection with Marxism-Leninism.

Academy of Medical Science

Medical education in general seems to be the responsibility of the Ministry of Health. However it is subject to recommendations and criticisms from the Academy of Medical Science USSR. This is a powerful organization. Its headquarters are in Moscow. It is composed of 150 members, who are elected by the Academy itself for a five-year term. The members are eligible for re-election on the basis of merit. The Academy of Medical Sciences USSR has a four-fold responsibility: (1) to conduct research and advise on problems of disease control; (2) to conduct research and advise on methods of promoting health; (3) to study, criticize, and recommend regarding health education, and (4) to evaluate new drugs and recommend those which are useful for inclusion in the pharmacopeia. The Academy has an imposing build-

ing in Moscow, with a fine library and a large staff. It receives large appropriations for the support of many special research institutes, such as the famed Institute for Experimental Medicine in Leningrad. It is this Academy which probably controls the details of medical education.

The general course of medical education in Russia is quite similar to that in Western nations. The first three years of medical training are chiefly preclinical, while the last two years of training are clinical, and include much hospital service. On completion of the five-year course, there is a year's internship. The medical graduate may apply for an internship, but is apparently placed in accordance with his capacity and with existing need. At the end of the internship, the physician may apply for a post as a general practitioner, at one of the well-equipped clinics in the big apartment houses or in the factories, or as a general practitioner in a country clinic in connection with a state or collective farm. Again the physician is placed in accordance with capacity and need.

Postgraduate training

After three years service as a general practitioner, the physician is required to take a three months postgraduate course. These courses are offered by the medical school faculties. The physician continues to be paid while he is taking his required postgraduate courses. At the close of the postgraduate courses, examinations are held, and on the basis of results of the examination, the physician may be promoted, may be returned to an inferior post, or may have an opportunity to go into specialty training. Postgraduate courses of this sort seem to be required every three years.

Specialty training is arduous. There

are not as many specialties as in this country, but the major specialties seem to be well developed. For pediatrics, general surgery, internal medicine, ophthalmology, otorhinolaryngology and public health, the residency or specialty training seems to be three years, in one of the major hospitals. The various subspecialties of surgery seem to require a five-year training period. At the end of specialty training, the physician may apply for appointment to one of the major hospitals, and usually gets a teaching place along with the position.

Income information scarce

There is little information on the income of Russian physicians. It is assumed that they are paid fairly well. That is, they may receive something like 2000 to 4000 rubles, or around \$500 to \$1000 a month, depending on their ability and position. Rents are low. On the other hand consumer goods are fairly expensive, so that much attention must be given to the matter of budgeting. One may buy savings bonds at the banks, but there is no credit, and no borrowing. There is a 5 per cent income tax across the board to pay for old age pensions, and for health benefits. Men may go on pension at 60, and women at 55. Usually both the husband and wife work. There seem to be many medical men who are married to physicians, so that the married team works together.

Medical facilities around Leningrad and Moscow are fair. We know little about the type of medical operation throughout the country, but it seems on the whole to be quite efficient. This may be due in part to the general good health of the Russian people, their relative determination to amount to something, and their relative freedom from psychosomatic

disturbance. More on this later!

It seems that there is much individual teaching in the science laboratories and in the medical schools. Classes seem to be arranged for 30 students in the laboratories, and a half dozen or so in the clinics. Laboratory equipment is conventional and fair. Experimental animals are extremely well handled. They are kept clean, they are well fed and are used repeatedly for chronic experimentation and for repeated demonstrations.

The Russian people are very stoical, and tolerate suffering in themselves without complaint. They also seem to be quite indifferent to the suffering they may cause others. On the other hand they seem to be individually kind and good humored. They are quite realistic, and acknowledge their own inconsistencies, and say that they are opportunists, and have to be expedient, in order to survive.

Scorn idealism

The character of their teaching is colored of course by many philosophical and ideological considerations. These permeate medicine to a considerable extent. The Russians exhibit much scorn for idealistic notions, and they show relatively little sentimentality. Nevertheless they love color, and they eagerly engage in games, folk dancing and pageants. They delight in music, art and drama. The art galleries and music halls are crowded. They are very sports-loving, and they are extremely competitive in every aspect of their sport life. The huge stadia in Leningrad and Moscow are crowded with people who watch the games.

The routine activities of life in the USSR go forward seven days a week, every day in the year. The work week

however is 44 hours, so that about a sixth of the people are off duty all the time. Accordingly the parks, recreation areas, sports pavilions, art galleries and other cultural institutions seem to be quite crowded all the time. The clinics seem to be fully staffed and open at all hours. The hospitals are quite conventional. The older ones are along the French style with large pavilions and courts. The newer ones are more in the conventional Western style. There is not much in the way of gadgetry, but the main facilities are available, and seem to be in relatively good order.

Conventional teaching

The teaching in the medical schools appears to be quite conventional, with textbooks and perhaps the teaching itself slanted toward ideological propositions involving Marxism-Leninism. The preclinical work is chiefly in anatomy on the one hand, and in physiology on the other. Physiology is very broadly approached, and includes a consideration of the functional activity of living things from micro-organisms to men, and from cells to societies. It includes genetics, embryology, biophysics, biochemistry, cytology, microbiology, organ and system physiology, pathology, pharmacology, psychology and sociology. These various subdivisions seem to be separately considered, with texts, and laboratories. There is relatively little work now of a satisfactory sort in genetics, even though the notorious Lysenko has been relegated to a minor position. Similarly there is practically no psychology. It is in the various aspects of sociology that Marxism-Leninism seems to be emphasized.

Pavlov the Great

In spite of this broad approach to the functional activity of living

things, the whole effort seems to be channelled narrowly into a detailed extension of the Pavlovian canon. I. P. Pavlov (1849-1936) was certainly a great physiologist, a great teacher and a remarkable person. He stood out for the freedom of science against authoritarianism, whether from Czar, or from commissar. He was extremely influential with his pupils, and from the Institute of Experimental Medicine in Leningrad, where he taught, have come most of the great teachers of physiology in Russia now. Nevertheless Pavlov's teaching has become canonical. It has been developed into an orthodoxy, with detailed extension into every aspect of conditioned reflexes, so that independent study or research has almost become heretical.

In 1950 there was a joint congress of the Academy of Sciences USSR, with the Academy of Medical Sciences USSR. This congress was organized and arranged by the politicians of the Party, for the purpose of establishing the orthodox position in physiological teaching, and to get the program in the field oriented as closely as possible to the Stalinist line. Many leading physiologists, such as Leon Orbeli and P. K. Anokhin, were deposed from their academic positions on account of their "deviation" from proper Pavlovian principles. Now after Stalin's death both have been restored to places of prominence, and it may very well be that the orthodoxy is becoming more liberal.

The chief text in physiology is by K. M. Bykov, director of the great Pavlov Institute of Physiology in Leningrad, a member of the Academy of Sciences USSR, and also a member of the Supreme Soviet. Bykov's text is quite conventional, but with heavy emphasis on reflex action. It is interesting that there is little in it on reproduction, the energetics of muscle

contraction, or on homeostasis. It is a solid book of over 900 pages, with good illustrations, and sells for 27 rubles, or \$8.75.

Anatomy is quite conventional, and about it there seems to be no controversy or difficulty. It covers the structural aspects of living things and in the medical schools is taught in separate courses for gross anatomy, microscopic anatomy including neurology, and pathological anatomy, both gross and microscopic.

Biochemistry is well handled, with conventionally equipped laboratories and texts. Microbiology is rather broadly considered and includes parasitology, and virology. It also is extended into the control of infectious disease. This control is exercised largely by inoculation and vaccination. All people are given booster shots once or twice a year, in connection with the required physical check-ups, either in the factory or the farm clinic. The result is, that in spite of open wells, and in spite of lack of any sort of sewage disposal, the incidence of preventable disease is remarkably low. The Russians are worried about increases in the incidence of cancer, heart disease and polio. They seem to be very grateful for the Salk vaccine. Venereal disease seems to be well controlled, except that there is recently a rise in gonorrhea. The Russians also are finding a rise in juvenile delinquency.

Pharmacology seems to be well developed, with careful consideration of new drugs. These include synthetic compounds, as well as items derived from native plant sources. No drugs are available for sale or prescription except those described in the pharmacopeia. These seem to be rather carefully chosen, as a result of commission action and recommendation from the Academy of Medical Sciences. The chief text in pharmacology is by S. V.

Anitchkov, in charge of the pharmacology laboratory at the Institute of Experimental Medicine in Leningrad. This is a conventional text of around 500 pages, with good organization and with much detail regarding chemical formulae. It seems to cover all types of drugs in a fairly adequate manner. The book is priced at 13 rubles or \$3.25.

The Russians have a large choice of antibiotics, and are vigorously searching for more. They are not satisfied with penicillin on account of allergic reactions and bacterial resistance. In local anesthesia they seem to be quite restricted to procaine. There appears to be much interest in preparations of the glands of internal secretion. By far the greatest interest however is in connection with drugs which have action on the autonomic or central nervous systems.

Pathology is approached largely from a physiological standpoint. Physical diagnosis seems to be well developed, but clinical laboratory procedures are by no means as extensive or as systematic as with us. Since the weeding out process in the medical schools is fairly rapid and extensive in the preclinical years, there seems to be favorable opportunity for individualized clinical instruction at the bedside and in clinics. History taking and records are not as detailed as with us, and there is very little appreciation of statistical control.

It is rather remarkable that Russian biological experimentation is deficient in statistical control. Although the Russians themselves have contributed significantly to the theory of probability, this work seems to be applied chiefly in mathematics and in physics. It may be that it is not well developed in biological work on account of its ideological implications. After all probability could hardly be acknowledged as much of a factor in a society

which is oriented in a deterministic manner. In clinical work there seems to be little statistical control.

The Russians are currently very interested in visceral-cortical relations. This is an aspect of psychosomatic medicine. For political reasons psychosomatic medicine as such is not acknowledged, but it is quite all right to work in a "materialistic way" on cortico-visceral interrelationships.

Medicine seems quite generally oriented in what we would consider a psychological manner. In Russia however this orientation is considered to be along the Pavlovian lines of conditioned reflexes. There is much attention to what we would call the process of learning, but in Russia this process is more generally referred to as "higher nervous activity." It is important to remember that Pavlov had very definite ideas on psychology and psychiatry.

Curricular details

The Russian medical curriculum seems to be five years with a required intern year, or six years total. Students enter at about 18 and are ready to practice at about 24. The school year is 10 months with two semesters of five months each, with a vacation between.

At the two Moscow medical schools there are in each 4,000 students with 500 on the teaching faculty. There are two curricula, one for practicing physicians, the other for sanitarians. Students in both take the same courses in the first two years: 160 hours of physics; 220 hours of foreign language; 400 hours of chemistry including biochemistry; 250 hours of microbiology; 400 hours of gross, micro- and neuro-anatomy, and 400 hours of mammalian and human physiology. In the third year they take pathology and pharmacology together. The medical students then take introductory clinical courses while the

sanitarians take special courses in hygiene. The clinical years for medical students are spent in hospitals and clinics, with emphasis on bedside teaching. There is also some work in public health.

In spite of large classes, medical teaching seems to be effective and satisfactory. Facilities and equipment, while conventional, are adequate. The high morale and enthusiasm of staff and students contributes much to the success of the medical teaching effort.

Summary

Russian medicine is in a fluid state of development, as is the case with so much of Russian science and professional life. It is still too early to assess the significance of de-Stalinization. There seems to be a liberalization from the strict authoritarianism of a few years ago. Russian medical men seem anxious to make contact with Western colleagues. Russian physicians certainly have an opportunity to be well acquainted with Western medicine, since most of the scientific journals in biology from all over the world are abstracted and indexed with great efficiency in Russia, and since most of the leading clinical journals are available in the major libraries.

In general Russian medical education is conventionally developed, but on a highly competitive basis, and with orientation toward the Pavlovian canon and standards of Marxism-Leninism. There seems to be high prestige associated with medical training and the practice of medicine in Russia, with accompanying high social and monetary rewards. Nevertheless the practice of medicine is rigidly controlled, and regular attendance at postgraduate sessions is necessary in order to retain practicing competence. The net result of

medical education in Russia seems to be a fairly satisfactory level of health on the part of the people. There is much propagandizing toward improvements in diet, and on the prevention of disease.

La Educación Médica en la Unión Soviética

En agosto de 1956, 4 fisiólogos americanos fueron a Rusia para visitar los institutos y laboratorios de Fisiología de Moscú y Leningrado. El autor, que fué uno de ellos, presenta aquí unos cuantos datos, así como impresiones personales, sobre la Educación Médica soviética, que pudo obtener durante una estancia de dos semanas. Pero advierte que no se trata de un informe completo, pues el tiempo fué demasiado corto y el acceso a fuentes seguras de información era difícil, aunque los visitantes tuvieron, al parecer, libertad de movimientos.

Todo el sistema soviético de educación está orientado hacia las Ciencias, desde las Escuelas Primarias hasta las Universidades y Colegios de Medicina. Hay actualmente en Rusia 33 Universidades situadas en las grandes ciudades, que poseen laboratorios de investigación en todos los campos, y las cuales producen la mayoría de los científicos rusos. Además, existen 800 Escuelas profesionales, de las cuales 81 están dedicadas a la Medicina. Estas últimas son enteramente independientes de las Universidades, hallándose bajo el control del Ministerio de Salud Pública, y sujetas, además, a recomendaciones y críticas de la Academia de Ciencia Médica, que es un organismo muy poderoso. En los últimos cuatro años se ha notado una enorme expansión de las Escuelas de Medicina, debido a la creación de nuevos institutos y, también, al aumento del número de estudiantes admitidos cada año. La admisión a las Escuelas de Medicina, así como los estudios y la práctica médicos, se desarrollan sobre una base sumamente competitiva. Soló un 33% de los estudiantes que entran a las Escuelas

de Medicina llegan a terminar la carrera. El profesorado se recluta entre el personal de los institutos de investigación científica, y en su mayor parte está formado por anatomistas y fisiólogos. La instrucción clínica es impartida principalmente por los médicos empleados en los Hospitales. Por lo general, no se ha roto en la Unión Soviética con los principios convencionales de la Educación Médica, aunque ésta se halle orientada hacia las teorías de Pavlov y los principios marxista-leninistas. Los estudios y la práctica de la Medicina gozan de gran prestigio social, y la compensación monetaria es alta, pero la práctica se halla estrictamente controlada, y los graduados están obligados a asistir a una serie de cursos a fin de obtener y conservar su licencia. Hay actualmente en Rusia un médico cualificado por cada 1,00 habitantes. Esta proporción se considera insuficiente, y se está haciendo un esfuerzo para aumentar el número de graduados médicos, aunque el nivel de salud de la población, en general, parece satisfactorio. Se hace mucha propaganda eficaz para el mejoramiento de la alimentación, prevención de enfermedades y vacuna contra enfermedades infecciosas. La Educación Médica no está tan estrechamente asociada a la investigación como en los países occidentales, pero los resultados de la investigación científica llevada a cabo en las Universidades y otras instituciones, son aplicados inmediatamente en la enseñanza médica. Los médicos rusos parecen ansiosos de establecer contacto con sus colegas occidentales, y, aunque todavía no se puede evaluar los efectos de la "de-stalinización" en la Medicina, parece advertirse una tendencia hacia la liberalización. Los médicos rusos tienen ciertamente la oportunidad de familiarizarse con los progresos de la investigación médica científica a través de las revistas profesionales del mundo entero, accesibles en las bibliotecas, y las cuales son muy eficazmente condensadas y provistas de índices.

Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

The Evaluation of Students by Their Peers*

WALTER G. KLOPPER

A WAY OF EVALUATING medical students which has generally been overlooked is to have them rank one another in terms of various criteria. The use of sociometric ranking procedures makes possible the investigation of certain relationships existing between the appraisal of personality traits and the appraisal of technical proficiency. Ranking is preferable to rating since it insures a broader range of evaluation and is presumed to diminish the "halo" effect.

The categories selected were all designed to measure activities of personalological as well as practical significance. This is part of a long range research program being carried on by the present author which is designed for the development of criteria allowing for the prediction of success in the practice of comprehensive medicine. In a previous study¹, it was suggested that "psychiatric receptivity" could be predicted at the outset of medical education. In the present study the students, having been together for two years, are asked to evaluate one another. This is considered significant in determining the social stimulus value of the individuals involved, rather than representing

any objective appraisal. When used in conjunction with faculty ratings and grades, it may serve the purpose of appraisal in a broader sense.

Subjects and procedure

The subjects in this study were 80 medical students who were assessed at the end of their sophomore year, having completed approximately one-half their medical education. In the first part of the procedure the students were asked merely to list in any order the names of their classmates insofar as they could recall them. In the second part of the procedure they were asked to list the names of those 10 members of their class with whom they were best acquainted.

Most of the students worked quickly and efficiently on the tasks assigned. They took some pains to conceal their rankings from one another and requested reassurance concerning the confidentiality of the data. The only technical difficulty arose from the fact that some students did not follow the instructions correctly. These were contacted individually and asked to repeat the procedure. All the students seemed to devote much serious consideration to the matter. They were then given the following instructions.

"On the following pages a number

* The author is indebted to R. Hugh Dickinson and Richard B. Seymour of the Nebraska Psychiatric Institute for their help in this study.

of different kinds of activities are listed (1-7). Under each activity please rank the 10 people you have listed in terms of that particular activity. Please evaluate the 10 people you have listed separately for each category. Be sure and list every single one of the 10 people for every single category. Where it says #1, put the person who you think would rank first in that area. As #2, the person who would rank second, and so on down to #10, where you would list the person as tenth best or least. The answers will be kept strictly confidential. Please turn the page and begin."

The seven categories in which they were asked to rank these ten names were the following:

1. If you have your choice of these 10 people as a companion for social events, such as a meal, party, or companion on a trip, how would you rank them?
2. Assuming that all of you have completed your training and you were in need of medical attention, please list the names in order of who you would be most likely to go to for professional help who you would go to next, etc.
3. If you were looking for a partner to go into practice with, list these 10 individuals in the order that you would approach them for this position.
4. If you were recommending these 10 people for a faculty appointment in the medical college (teaching and research) following the completion of their training, which would you consider as being the best bet for this kind of position, which the next best, etc.
5. Please rank the 10 individuals listed in terms of how capable they would be in your opinion in the field of psychiatry.
6. If you were choosing one of these people to represent your class in a petition to the dean, whom would you choose first, next, etc.
7. Finally, please rank the 10 individuals in order of their physical attractiveness.

After all the 80 students had completed this experimental procedure, the results for each individual were tabulated on a sheet on which each rank given to him was tabulated. The rank for each of the seven categories for each student was then represented

by the mean rank assigned to him by all those which had included him among the 10 they knew the best. They were also assigned a grand mean rank on the basis of an evaluation of their ranking in all seven categories.

After the completion of the above, it was possible to convert all the data into equivalent ranks. On the basis of the first part of the experiment the students were ranked from 1-80 in terms of how frequently they were listed by their fellow classmates. They were then ranked in the same way on the basis of their grand mean and their mean on each of the individual categories. Thus, the person with the lowest rank in the given category would be ranked as #1, the next as #2, and so on down to 80 with that person with the highest mean rank (approaching 10). After thus ranking within each category, it was possible to work out rank-order intercorrelations of each category with every other category, including the grand mean as well as the "known" category which refers to the frequency with which the names were listed in the preliminary part of the experiment.

Results

In Table 1 are listed the various rank-order correlations described above. The asterisks represent the results of *t* tests for various rank-order intercorrelations (ρ) between all of the categories studied. In the table ** refers to significance at the .01 level and *** refers to significance at the .001 level. Of the 36 intercorrelations listed, 26 were significant beyond the .01 level.

Discussion

In studying the above results it is evident that there is no significant

TABLE 1 — RANK-ORDER INTERCORRELATIONS

	Mean rank	Social	Medical attn.	Partner	Teach. & Res.	Psychiatr.	Admins.	Phys. attract.
Known	.000	-.181	.109	-.122	.171	.113	.157	.070
Mean rank		.596***	.861***	.842***	.753***	.723***	.810***	.580***
Social			.354***	.742***	.116	.288***	.358**	.561***
Medical attn.				.722***	.840***	.643***	.669***	.307**
Partner					.493***	.525***	.562***	.470***
Teaching & res.						.633***	.594***	.176
Psychiatry							.572***	.269**
Adminstr.								.532***
Phys. Attract.								

relationship between the number of times a student was listed as known by his classmates and their evaluation on any of the sociometric categories. An inspection of the data reveals that one of the possible reasons for this lack of relationship is a tendency for the well-known individuals in the group to be bi-modally distributed in terms of their evaluation on other categories. Thus, an individual might be well known in the class unit because of being highly regarded or being in disrepute. All of the individual categories are associated significantly with the ranks on the grand mean, which can probably be attributed to the fact that each of the individual categories contribute to this score as well as to the possible effect of a halo.

Category I (Social attractiveness) is correlated with most other categories, the highest correlation being with Category III (Partner-in practice). There was no correlation between the evaluation of social attractiveness and the evaluation of ability on teaching and research, indicating that the students apparently have a stereotype of an academic position as not necessarily including social graces. When considering the correlations with Category II (Medical attention) it is interesting to note that the highest relationship is with the teaching and research category. Thus, the faculty member, even though perhaps not considered social-

ly attractive, is still regarded with a great deal of respect by the student, as based upon the data above. Some relationship evidently exists between this category and all others. Consideration of Category III (Partner in practice) reveals it to be correlated with all other categories. Category IV (Teaching and research) is correlated with all other categories except Category I (Social attractiveness) and Category VII (Physical attractiveness). Apparently the students have a stereotype of a person skilled in teaching and research, as being socially and physically not particularly attractive but highly skilled technically. Category V (Psychiatric aptitude) was correlated with every other category. Contrary to popular supposition, people highly regarded as candidates for the field of psychiatry are also considered as socially attractive, technically skilled, and presumably well adjusted. The same is true of Category VI (Administration) which also shows positive intercorrelations with all other categories. Category VII (Physical attractiveness) is correlated with all others with the exception of the teaching and research category, as has been mentioned above.

Summary and Conclusions

The above study has demonstrated that medical students are able to evaluate one another in a number of

ways and that they are prone to consider a classmate as generally good or generally poor. Certain popular stereotypes have been borne out and others have not. This is a part of a long-range study of this particular class, which will be followed up during the rest of their medical career. A repetition of this procedure during their senior year might reveal the influence of the clinical years on their attitudes toward one another. Both faculty ratings and future professional success should bear some relation to the rankings developed in the present study if we assume that both character and technical attributes of students have an influence on their ability to practice successfully. The methodology illustrated in the present study is suggested as an evaluative procedure, as well as a measurement of current attitudes and value systems among students.

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La valorización, por sus compañeros, de los estudiantes de Medicina

Un modo de apreciar la capacidad de los estudiantes de Medicina, es que traten de clasificarse unos a otros en relación con una serie de valores referentes a la personalidad, y según criterios determinados. El uso de tal procedimiento hace posible, según el autor de este informe, la investigación de ciertas relaciones entre la personalidad y la proficiencia técnica. Este estudio forma parte de un programa de investigación, de gran envergadura, llevado a cabo por el autor a fin de desarrollar criterios útiles para predecir, al principio de su carrera, el éxito o fracaso de un estudiante en la práctica de la Medicina comprensiva. En el presente trabajo, el procedimiento aplicado es descrito detalladamente, y los resultados del experimento, ilustrados gráficamente en la Tabla I, son discutidos y apreciados por el autor.

Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

The Individual Tutor System at Oxford

P. C. REYNELL

FOR THE LAST nine years the Oxford University Clinical School has been experimenting with the individual tutorial system which has long been the nuclear teaching method in other faculties in the university. For the Oxford undergraduate, whatever his faculty, lectures are provided very much on the cafeteria system. He can pick and choose which he will sample with all the restraint of a heavyweight boxer preparing to enter the ring as a middleweight. But the weekly tutorial is sacred. The tutor outlines a program of reading and the student returns the next week with an essay which he reads to his tutor. The essay is criticized and the subject discussed for an hour or more. No particular effort is made to cover the subject systematically or to "stick to the point." The point is that there is no point. Ideas are followed up as they arise and the student is encouraged to develop any theme which interests and excites him. The emphasis is on logical thinking and the interpretation of evidence.

The tutorial in clinical medicine

In introducing this system into clinical medicine, certain special problems arise which are not applicable in the case of a student reading for an arts degree. The individual tutorial is of course a supplement to work in the wards and the labora-

tories and not a substitute for it. In England the sheet-anchor of medical education is teaching on the individual patient at the bedside or in the outpatient department. It is, I think, a good system. It is easier to remember a patient than a page in a book. The farmer with nephritis in the corner of the ward is a peg from which a lot of knowledge can be securely hung. However, with the growth of scientific medicine, the student needs an ever-larger framework of basic principles to interlock with his practical experience, and it is the business of the tutorial to help him to acquire this. I say to help him to acquire it and not to hand it to him ready made, for he must lay for himself the foundation on which he will build for the rest of his life. This foundation is an individual thing which will determine the shape of the final edifice and the laying of it is the very essence of university education.

The medical curriculum is so full that it is difficult to insure that the student gets sufficient time to prepare for his tutorials. I find that anything less than two weeks does not leave enough time for reading and thinking and I am always prepared to extend the period to three weeks at the request of the student.

The system can only be successful in a school where there is high ratio of teachers to students, for an essential feature of the individual

tutorial system is that it is individual and can be geared to the needs and intelligence of the individual student. Occasionally it is possible to take two students of the same seniority and similar intellectual capacity together, but if the group is larger it becomes an altogether different teaching technique. Few doctors will want to give more than two hours a week to this type of teaching and it follows that no teacher can take on more than three or four pupils at the same time. In Oxford we are fortunate in that the student intake is limited to a maximum of 32 a year, and there are usually some 40 potential tutors available. During the first year, while doing medicine and surgery, the student is allotted to a tutor who may be a physician, a surgeon or, sometimes, a pathologist. A change of tutor during this period is permitted at the request of either student or teacher. During the next six months, which are devoted to obstetrics and gynecology, the student has a tutor in these subjects. Thereafter he has some degree of choice. He may ask for a tutor who will help him to follow up a special interest or one who can close a gap in his knowledge or even one who will help him to get through his examinations (although this is not encouraged except in the case of the real lame duck). For example, a student who has had a physician as tutor during his first year may ask for a surgeon during his last year.

The technique

Tutors differ considerably in their methods and I am merely describing my own. I prefer a student early in his course to one under the shadow of his finals. It is difficult for our American colleagues to realize the over-riding importance of the final

examination to the British student. It is often a difficult exam with a significant failure rate, demanding a great deal of factual knowledge and it hangs like a wet blanket over the last few months, extinguishing every flicker of originality and curiosity.

A tutor needs a list of key references for his pupils who should be shown how to use cross references and how to get the meat out of a scientific paper quickly. The torrent of new medical literature grows ever swifter and the average student needs a pilot if he is not to drown in his library. There is an endless variety of subjects suitable for study and it is advisable to allow the student considerable latitude in his choice. He will learn best those things which interest him the most. On the other hand, he will sometimes propose a subject to fill a gap in his knowledge or one which he finds confusing. It is important not to choose a subject which can be taken straight from a textbook, or the more indolent student will never read anything else. Nevertheless, a chapter from a good textbook may be a suitable point of departure for his reading.

Subjects which cut across the conventional subdivisions of medicine are particularly rewarding. e.g. "The hazards of prolonged bed rest," "Psychosomatic and allergic disturbances of gastrointestinal function," "Respiratory failure," "The pathogenesis of oedema" etc. It is even worth while giving some attention to the semantics of medicine. I have never met a student who could give a satisfactory answer to the question "What is a disease?" and few who have ever thought about it, but they soon learn to see that classifying diseases under such headings as hypertension, epilepsy, tuberculosis, phenylketonuria and carcinoma of

the bronchus is like classifying doctors as physicians, geriatricians, Frenchmen, charlatans and the editor of *The Journal of Medical Education*.

The tutor's job is not to expound. If he is going to do all the talking he had better be standing at the rostrum of a lecture theatre. His function is to act as a catalyst and get the student talking and thinking for himself. He may let the student lead off and then question, amplify and, we hope, clarify. He needs a quiver full of provocative questions, "Why should blood clot in a coronary artery?", "Why put a patient with peptic ulcer on a diet?", "Why do patients with leukemia die?" etc. I do not believe that a formal written essay is always necessary, but enough should be put on paper to serve as a basis for discussion and as a written record to which reference can be made later, for the medical student has but a human memory.

The tutors

It is an oversimplification to say that there are no good or bad teaching methods, only good or bad teachers, but the value of the tutorial obviously depends on the quality of the tutor. He must be a doctor who asks himself the same sort of questions that he asks his pupils. The technician-doctor is automatically disqualified. Wide clinical experience is an advantage, but he need not necessarily be a senior clinician. All men of the right type down to and including registrars are suitable. I believe that some research experience is desirable for the insight which it gives into the methods by which knowledge is built up and into the nature of certainty and uncertainty in medicine. But the most important quality of all is enthusiasm for the job. If a tutorial is an unwelcome chore or merely a way of earning an

extra guinea, it had better not be given at all. In practice suitable tutors are nearly always willing to undertake this type of teaching, for the student is not the only one to benefit from the encounter. Contact with a young mind fresh from physiology and biochemistry and unencumbered with preconceived ideas can be immensely stimulating, and in the cut and thrust of discussion the tutor will find that he cleans a number of cobwebs out of his own attic.

Perhaps I have drawn too idyllic a picture and presented the individual tutorial as a kind of 20th century Platonic dialogue. It is not always so. The mediocre student may sit like a fledgling cuckoo waiting to be fed with predigested factual knowledge. Somehow this approach must be altered and he must be shown how to dig for his own grubs. For the occasional bird who cannot or will not learn to spread his wings, the tutorial is not a suitable teaching technique—and perhaps medicine is not a suitable career.

El sistema de Tutores médicos en Oxford

El autor, un *Medical Tutor* en la *Clinical School* de Oxford (Inglaterra), discute en este informe el sistema de Tutelaje individual, que ha sido establecido durante mucho tiempo como método esencial de enseñanza en otras Facultades de dicha Universidad, pero el cual sólo desde hace 9 años fué introducido a la Escuela Clínica, en forma experimental. Según dicho método, el Tutor médico asigna a cada estudiante, individualmente, un programa de lecturas semanales; al cabo de una semana (a veces se extiende ese plazo) el estudiante tiene que presentar al Tutor por escrito un ensayo, a base de los textos, y éste es criticado y comentado por el Tutor, a lo cual sigue una discusión, de una hora o más, sobre el tema y otros problemas que éste suscita. El sistema de Tutelaje individual crea, en la Escuela Clínica, algunos problemas que no se plantean en otros Departamentos de la Universidad donde está en uso.

En primer lugar, según advierte el autor, ese sistema debe ser sólo *suplemento*, y de ningún modo *substituto* de los trabajos de Hospital y Laboratorio; además, hay que tener en cuenta que el *curriculum* de esa Escuela se halla tan sobrecargado que resulta difícil asegurar que el estudiante tenga tiempo suficiente para la lectura y el ensayo semanales. El sistema sólo puede tener éxito, por otra parte, cuando existe una proporción elevada de instructores, pues un factor esencial en el sistema de Tutelaje es que sea realmente *individual*, es decir, que puede ser adaptado

a las necesidades e inteligencia de cada individuo. En Oxford, la situación, en ese respecto, ha sido hasta ahora afortunada, pues el número de nuevos estudiantes por año es limitado a 32, y suele haber siempre unos 40 Tutores disponibles. El autor describe como funciona dicho sistema en Oxford, en la práctica; discute las diferencias en los métodos y técnicas de enseñanza que los varios Tutores adoptan dentro del sistema de Tutelaje, sus defectos y valores, así como la cuestión de qué hace a un Tutor "bueno" o uno "malo".

BORDEN AWARD NOMINATIONS

Dr. Oliver H. Lowry, chairman of the Committee on the Borden Award, announces that nominations for the Borden Award in the Medical Sciences for 1957 are now open.

This Award was established by the Borden Company Foundation, Inc. in 1947 and consists of \$1,000 in cash and a gold medal to be granted in recognition of outstanding clinical or laboratory research by a member of the faculty of a medical school which is a member of the Association of American Medical Colleges.

Regulations Governing the Award:

1. Nominations may be made by any member of the faculty of a medical school which is a member of the Association of American Medical Colleges.
2. The Award in any year will be made for research which has been published during the preceding five calendar years.
3. No person may receive more than one Borden Award for the same research, although he may receive a later Award for a different research project.
4. If two or more persons who have collaborated in a project are selected for an Award, the gold medal and check shall be presented to the group, and bronze replicas of the medal presented to each of the collaborators.
5. The Association may refrain from making an Award in any year in which no person reports research of the quality deserving an Award.
6. Only one Award shall be made during any one year.
7. A nominee who fails to receive the Award may be nominated for the Award for the same work in a subsequent year.
8. Materials supporting a nomination should include:
 - (a) Five copies of a statement covering the academic history and scientific accomplishments of the nominee.
 - (b) Five copies of a reasoned statement of the basis for the nomination.
 - (c) Five copies of reprints reporting the nominee's important researches.
9. All materials supporting a nomination must be in the hands of D. F. Smiley, M.D., Secretary, 2530 Ridge Avenue, Evanston, Illinois, by August 1, 1957.

Medical Education in Ancient Greece and Rome

I. E. DRABKIN

IN DEALING with a period of 1,000 years from the time of Hippocrates to the end of classical antiquity and with so large and diversified a region as the Mediterranean world, we find, as we may expect, the widest variations in the level of medical knowledge, in standards of the medical art, and in the social status of medical practitioners. Medical education reflects this diversity. It takes a variety of forms, including, at the one extreme, the transmission of purely practical secrets of the craft from a physician to his son or to an apprentice, and, at the other, a completely bookish and academic approach.

In general, throughout the period we are surveying, the practice of medicine is most often viewed by patient and physician as a craft, and the prevailing type of education is traditional and technical and is conducted as a practical apprenticeship. But with the growth of biologic theory and scientific investigation, beginning about the fifth century B. C., a new force makes itself felt. Medical science develops and has its effect on both medical practice and medical education. Indeed, its importance goes beyond antiquity. For the scientific and theoretic tradition becomes embodied in medical literature, and it is this tradition that is passed on to the medieval and the modern world and that in many ways still conditions our modes of thought.

Medical craft

There are then two main streams that enter into rational medicine in classical antiquity, the craft tradition, based on generations of accumulated practical experience, and the newer scientific or theoretic tradition, which we shall presently examine. In the absence of such standardizing factors as licensure, there is great variation in the relative importance given to these two aspects and in the ways they interact in medical practice and education. I speak only of rational medicine, without minimizing the importance of magic and other forms of the irrational in antiquity, for these are consciously excluded from rational medicine by all the great writers (though occasionally there are cryptic intrusions, then as now).

Various works of the Hippocratic Collection written between about 450 and 350 B. C. give us some notion of medical practice at the time. They show us a craftsman physician, frequently one who travels from city to city and knows the ailments peculiar to various regions. He diagnoses on the basis of this knowledge and what he sees and can find out about the patient, the pains, fever, urine, feces, sweats, mental state, and so on. (At a somewhat later period an elaborate classification of various types of pulse is an important diagnostic tool.) He is particularly aware of prognostic

signs, for he may decline cases that are manifestly hopeless, in order to avoid criticism and loss of reputation; and he will enhance his reputation by correctly predicting the course of illnesses. In fact, skill in prognosis will be the most practical proof of competence.

The apprentice who accompanies him will develop these skills. He will also observe his master treating diseases, employing, when indicated, expectant measures and good nursing, controlling diet, exercise, bathing, and regimen, or using drugs in external applications, or internally as laxatives, astringents, diuretics, emetics, sedatives, and so on, or performing venesection, cauterization, or cupping, or, in surgical and obstetrical cases, using instruments and manual techniques. In serious cases a competent apprentice will attend the patient as a nurse, either in the patient's house or in quarters connected with the doctor's office. If the student wishes to prepare for the practice of surgery, he may follow the advice of a Hippocratic author and accompany troops on a campaign, where he will have good opportunities for training, presumably as assistant to a military surgeon.

With such practical work he will, if fortunate in his choice of master, combine the study of books, such as those of the Hippocratic Collection dealing with pathology, prognostics, therapy, dietetics, surgery, gynecology, medical ethics, and perhaps also biologic and physiologic theory. And, no doubt, he will study and constantly refer to medical herbals for information about the preparation, use, and efficacy of drugs.

How long he remains an apprentice will obviously depend on many circumstances, not least upon the breadth and depth of his studies. This question is bound up with the matter of

specialization. Though Greek medicine at its best did not encourage specialization before the whole field had been studied, there were, generally among the poorly educated doctors, those who traveled through the country practicing a single specialty, such as cataract couching, lithotomy, or the treatment of hernia, trades which they had learned in a purely practical way from their fathers or others. This sort of training would be a far cry from the broader type of medical apprenticeship which I have been describing and to which I now return.

Medical science and theory

I mentioned some books of the Hippocratic Collection that the apprentice may have studied. (As for herbals, though none is extant from the older period, we may take the great book of Dioscorides as reflecting the best Greek pharmacological tradition.) To be sure, these books give the student much positive information and precise directions. But if we examine them more closely, we find that many of them contain or presuppose, in greater or lesser degree, an element of biologic theory and science, or even speculation and philosophy. I am inclined to think that in the sum total of ancient medical practice, only a small minority of practitioners were concerned with such science and theory. But they were, one might say, the leaders of the profession, and had an importance far out of proportion to their numbers. The ancients themselves frequently refer to the distinction between the nonscientific practitioner and the theoretically grounded physician. Thus Plato speaks of the routine and impersonal procedures of doctors who have learned their trade in an apprenticeship that involved only observation and experience,

without theory; he contrasts the rational, humane, and individualized practice of those who have made the study of nature the foundation of their art and of their teaching. And Aristotle mentions "physicians who study their art more philosophically," in the sense of making the study of nature fundamental.

How did this distinction come about? From the time when the first philosophers of Greece, more than five centuries before Christ, took all nature, including man, as a province for investigation and speculation, attempts were made to understand life processes, to postulate ultimate constituents of the human body, to define health and disease in terms of these constituents, in short, to lay theoretical foundations for medicine. Some medical practitioners with a speculative turn of mind, trying to find a rational basis for their medical procedures, helped to develop one or another viewpoint on these basic questions and instructed others along these lines. The outcome was sometimes the formation of a medical sect or school of thought, essentially an influential teacher and his followers. The influence of these groups contributed to the rise of scientific and theoretic, as contrasted with strictly practical and technical, medicine.

Thus some made certain bodily fluids or humors basic (a theory that ultimately led to the classic system of four humors—blood, phlegm, yellow bile, black bile) and viewed disease as an imbalance of the humors; others made elementary qualities of heat, cold, dryness and moisture basic, and still others connected these qualities, on the one hand, with the elements of nature (like earth, air, fire and water), and on the other hand, with the humors; some considered a form of air or breath (*pneuma*) to be basic, with disease as a derangement

or disturbance of it; others posited invisible corpuscles or atoms moving in invisible pores.

But hand in hand with these speculations often went what we should call scientific investigation—anatomical research and even some crude physiological experimenting to learn more about the structure and functioning of the body. And in these groups the study of anatomy and physiology came to be the hallmark of the best medical education. A merely practical apprenticeship was not enough for the training of the scientific physician.

Toward the end of the fourth century B. C. the founding of Alexandria and its great research institute gave additional impetus to scientific study, and the museum there became a great center of medical studies. Though previously inferences about the internal structure of the human body had been derived largely from dissection of animal bodies, now for the first time human cadavers were systematically dissected, and, according to tradition, even human vivisection was attempted. It was in this period that Herophilus and Erasistratus made their great anatomical discoveries. They were not only great researchers; like their predecessors, Diocles, Praxagoras and Chrysippus, they were also great doctors and teachers and gathered around them devoted students and followers.

Medical sects

To be sure, these men professed a variety of doctrines, but they had this in common, that on the basis of their observations and inferences they framed theories about the human body, the nature of health and disease, and the underlying anatomic or physiologic changes (the so-called "hidden causes") involved in par-

ticular diseases, e.g., humoral dyscrasias, disturbances of pneuma, imbalance of basic qualities, impactions of atoms, etc. The study of anatomy and physiology were, in their view, fundamentally necessary to the medical art, in fact were the scientific or theoretic basis of that art. As a group, these physicians and their followers were called Dogmatists or Rationalists.

Their viewpoint did not go unchallenged. Even in Hippocratic times there had been those who believed that medicine had become trammelled with philosophic speculation. The Hippocratic treatise *On Ancient Medicine* reflects this view. And in the third century B. C. there was a strong movement, influenced by radical skepticism, which rejected all speculation about the unobservable, all theorizing about "hidden causes." The Empirics, as the leaders of this movement were called, held that the study of internal anatomy and physiology could be of no use to the practitioner of medicine, who needed only to be guided by his own experience and the accumulated experience of the past.

At the beginning of the Christian Era still another doctrine, Methodism, arose at Rome in opposition both to Dogmatism and to Empiricism. The Methodists considered Dogmatic science, with its variety of conflicting and conjectural physiologies and its speculations about the unobservable, to be useless for the healing art. On the other hand, adopting a less radical skepticism than the Empirics, they made classifications of diseases on the basis of visible evidence and methodically applied a therapeutic doctrine of *contraria contrariis*.

I mention this development of sects to show that for several centuries, before the unifying influence of Galen and his successors made itself felt,

there were conflicting philosophies of medical education, and of the relation of medical science and theory to medical art, even among the theoretically trained physicians. Thus the Methodist Thessalus in the first century after Christ reversed the Hippocratic doctrine *ars longa, vita brevis*; he attracted hosts of students with his claim that the medical art was really so simple that he could make doctors of them in six months. Yet the actual therapeutic practices of the various groups did not differ as much as their philosophies of science, and many Empirics and Methodists studied anatomy and physiology not for their usefulness in practice, but purely for the sake of knowledge. For example, the Methodist Soranus was one of the best educated of all physicians in those very fields which his Sect proclaimed of no practical use.

To be sure, anatomical and physiological research in antiquity gave only the meagerest assistance to the medical art. But the Dogmatists or Rationalists, who proclaimed the importance of these studies for the medical art, had a philosophy that could serve as a basis for medical science. The Empirics, on the other hand, virtually denied the possibility of science, and the Methodists were generally not interested in theoretic or scientific considerations.

Galen

The second century witnessed the virtual end of sectarianism in medicine with the decline of the Empiric and Methodist and various minor sects, and the victory of the Dogmatist or Rationalist viewpoint as embodied in the work of the great philosopher, scientist and physician, Galen. The dominating power of Galen's intellect and of the copious writings in which he developed his

comprehensive system of medicine combined with other factors to make his the standard system of the Graeco-Roman world, the one that was passed on to later ages.

In this study of medical education, it will be of interest to glance at Galen's own education, even though it was hardly typical of doctors generally. After the elementary studies of childhood, followed by secondary studies in mathematics, literature and rhetoric, begun at about 12, Galen at 15 entered on the study of philosophy. He studied with a variety of professors, representatives of different schools of thought, Platonist, Peripatetic, Stoic and Epicurean. When his father (as a result of a dream) decided that Galen should study medicine, the boy, then 16, first worked for four years with a great anatomist at Pergamum, then with outstanding physicians successively at Smyrna, Corinth, and Alexandria. It was only after some 12 years of medical studies (including much original research and writing) that Galen engaged in regular practice. Throughout his whole life, despite a long career as court physician, he devoted himself to study, research (mainly anatomical research), lecturing, and writing. He sought to conform to his own conception of the best physician as a man who is also a philosopher, in the sense of having the broadest possible education, both general and medical, and applying his knowledge according to the highest ethical principles.

The study of anatomy

One aspect of Galen's research is of interest in connection with the history of medical education. We have seen that at the time of Herophilus and Erasistratus there was systematic dissection of human cadavers in Alex-

andria, in part because the kings cooperated with the anatomists by making the bodies of condemned criminals available. This was an exceptional situation. Elsewhere in the ancient world, anatomy, if studied at all, was largely studied by the dissection of animals. Even in Alexandria in Galen's time, though human skeletons were available for instructional purposes and students could observe (but probably not perform) some dissection of human cadavers, these opportunities must have been very limited. Galen's own anatomical works are generally based on the dissection of apes. Galen exhorts students to keep practising animal dissection so as to be ready to take full advantage of such opportunities for the dissection of human cadavers as may arise, e.g., when a body is disinterred by a stream, or the body of an unburied brigand is found.

The work of Galen represents the high point in ancient anatomy. After his time little new research was carried on in the ancient world. But can we say that anatomical studies were dead? The difficulty in historical reconstructions of the kind I am making, based on fragmentary evidence, is pointedly illustrated by the recent discovery of a fresco near the tomb of a surgeon in a Roman catacomb (see *N. Y. Times*, April 11, 1956, p. 1). The fresco is supposed to date from the fourth century after Christ, and some believe that the scene depicts a professor lecturing on anatomy to his students, while a demonstrator points with a rod to a human cadaver whose abdominal cavity is opened. The scene has been interpreted in other ways and the discussion is still going on, but the fresco may prove to have an interesting bearing on the history of medical education.

In any case we are probably safe in saying that after Galen anatomy

and research in general declined. Galen's system of medicine was widely adopted by succeeding generations of "scientific" physicians, and it was adopted largely as a complete and closed system. Indeed, it must be said that in his efforts to fit all phenomena to a preconceived teleological philosophy and in his occasional lapses into verbalistic and sophistical disputation Galen himself exhibited scholastic tendencies at variance with the truly scientific temperament. It was these tendencies, rather than the scientific aspect of his genius, that were more often congenial to later ages. This circumstance was also to have its effect on medical education. But in order to understand this development we must glance at the place of medicine in higher education generally in antiquity.

Universities and nonprofessional medical education

While higher studies in the ancient world remained largely in the hands of individual teachers, schools and centers of instruction did develop, and with the gradual extension of state control in the first centuries of the Roman Empire, there arose in various places what may be called universities. There were also the research institutions, like the Museums at Alexandria and Pergamum, where instruction, at least of an informal character, was given by the members, who were primarily engaged in research.

Medical studies found a place at some of these university centers. But the studies took more than one direction. On the one hand, there was the sort of professional teaching that an Erasistratus or a Herophilus might give and that a student would supplement by practical apprenticeship under that teacher or some other

physician. This professional teaching is essentially of the kind we described for the earlier period. But there is this difference, that in what is considered the best type of medical education the master-apprentice relation is increasingly replaced by that of professor-student. Some professors had large numbers of students (as we saw in the case of Thessalus). This fact in itself did not preclude clinical instruction at the bedside. In fact, we have Martial's well-known epigram from first century Rome: "I lay sick, but you came to me at once, Symmachus, accompanied by a hundred students. A hundred hands chilled by the north wind felt me. I had no fever before, Symmachus; now I have."

But the university atmosphere also helped to develop another and quite different type of medical education, a non-professional medical education. From the very origin of Greek science there had been a non-professional interest in biology and medicine among Greek philosophers who were seeking to study all nature rationally. The tradition connecting Alcmaeon, Democritus, Empedocles, Anaxagoras, and other Presocratics with medicine is probably to be viewed in this light.

The study of biology and medicine as part of scientific or philosophic activity, and not for purposes of professional practice, survived throughout antiquity. Possibly social status had something to do with the division between professional and non-professional study. But there were always certain intellects in antiquity, as in the Renaissance and other ages, who sought to encompass all knowledge, an endeavor with which a busy medical practice would not have been compatible. Thus as early as Aristotle there is a tripartite division: "the physician who is a craftsman, the

scientific physician, and the man who has studied medicine as part of his education."

The inclusion of medicine as an important branch of learning, even for those not intending actually to practice medicine, gained strength in the Roman period. Thus Varro divided his great encyclopedia into nine disciplines, the canonical seven liberal arts and, in addition, architecture and medicine. Celsus' treatise on medicine is part of an encyclopedic treatment of five basic arts, the others being agriculture, military tactics, law and rhetoric. Like so many other medical works of antiquity, it was written for the educated layman, not merely for the professional practitioner. In Roman times there was also an appreciation of the value of a general knowledge of medicine for men in government who were concerned with problems of public health.

The non-professional type of medical study was bookish and academic rather than practical, and was not, I presume, supplemented by any form of practical clinical training. The whole tendency in later Roman times toward systematizing and codifying, an essentially scholastic rather than scientific tendency, was congenial to this type of education. The emphasis on books and lectures, rather than laboratory and clinical research, was at least in part responsible for the emergence of the so-called iatrosophists of the late Alexandrian period.

The iatrosophists

Greek university education from the earliest period frequently exhibited a sophistical interest in rhetoric and disputation, an interest in words rather than things. Disputations were a part not only of academic medical education, but even of professional

life. Thus we have an inscription from Ephesus which gives the names of victors in contests among physicians; one of the contests involved a discourse on a problem set by judges. Medical debates and disputations are often described by Galen who generally (but not always) insists on dissection and autopsy rather than talk. This very insistence indicates that the arguments were generally dialectical and not controlled by observation and experiment.

Now the iatrosophists were professors of medicine, often connected with universities, who excelled in this kind of dialectic and debate; and while some of them also practised medicine, others devoted themselves exclusively to teaching and lecturing. Their teaching was directed to students planning to enter the medical profession, as well as to those for whom medical education was part of general education. It is symptomatic of the times that the great achievements of these men of the fourth and later centuries, as we read of them, e.g., in Eunapius' *Lives of the Philosophers*, consist not in medical or scientific research, but in rhetoric and debate. Moreover, it was the current feeling that for the best medical education one must go to Alexandria and include in one's course of study attendance at the lectures of a iatrosophist like Zeno of Cyprus (who was Oribasius' teacher) or Magnus of Nisibis.

To be sure, the course of study could not have been devoid of clinical experience, for which there were excellent opportunities. For Alexandria had remained a center of medical practice as well as medical education, and we are told that even as late as the sixth century there were offices of busy doctors scattered all over the city. But, as I have already indicated,

the academic side of medical education at Alexandria, and generally in the Eastern part of the Empire, became standardized. Certain Hippocratic and Galenic works together with some commentaries and epitomes furnished the basis of the course of study, a course whose influence was to continue long after the ancient period.

The role of the state

In discussing the universities I referred to the growing influence exercised by the state in Roman times. This influence affected medical education in various ways. Beginning with Julius Caesar the rulers supported higher education by conferring privileges on teachers of liberal arts, rhetoricians, men of letters, and philosophers, and we find that *medici*, whether physicians or teachers of medicine, were frequently mentioned in these decrees. Sometimes lecture halls were assigned to teachers, or special salary payments were decreed, or exemptions from public duties and taxes were granted. A limit was generally placed on the number of physicians, philosophers, etc., who were entitled to the privileges, and the governing body in each locality determined who were to receive the honors and privileges. So, though there was no fixed system of licensing for teachers and physicians, we have in these procedures an incipient form of state supervision.

This supervision was exercised in other ways too. For example, a decree of the emperor Domitian extended certain privileges to teachers of literature, rhetoric, medicine and philosophy, but with the proviso that no privileges be extended to those who taught slaves. Domitian seems to have taken this action at the behest of professional groups who complained

of competition with the growing number of slaves who had obtained professional training. We are reminded that Galen also complained (but for different reasons) about Thesalus' enrolling large numbers of slaves in his accelerated course in medicine.

State participation in medical matters is also illustrated by the institution of public doctors. These were physicians hired by the community to treat citizens without charge and to act as public health officers. A special tax (*iatrikon*) was generally levied to support this service. The institution began at least as early as the sixth or seventh century B. C. in Greece, and continued throughout antiquity. But there is no evidence that these public doctors were in any way connected with medical education or, in fact, that any special tax like the *iatrikon* was used to support public medical education.

Hospitals

The hospital plays a most important part in modern medical education. This was not the case in antiquity. The few institutions which are in any way analogous to the modern hospital are of small importance and have no close connection with education. We have seen that in the early period the physician occasionally had patients stay for a time in quarters connected with his office (*iatreion*), though most cases were treated at home, and that in both situations student apprentices had an opportunity for practical experience.

So, too, in the Roman period the large estates had infirmaries (*vale-tudinaria*), generally, though not exclusively, used by slaves of the estate, and attended by slave physicians and nurses. But in neither case was there any connection with formal medical

education. This is true of the military hospitals, which were well organized during the Roman period. Still we must remember that whenever an intelligent and interested physician has enlarged opportunities to observe and treat patients the experience is invariably educational for him. We have seen that as early as Hippocratic times young doctors were advised to take advantage of the medical and surgical experience that the army made possible; this advice must have been taken often by young doctors in Roman times as well.

In connection with hospitals, we think also of the temples of Asclepius, where priests treated patients who, in most cases, had been given up as incurable by physicians. Without going into the problem of the relation between lay medicine and temple medicine, we may say that there is no evidence that the temples were in any sense institutions for the education of lay physicians or for the practice of medicine by lay physicians, as some have held.

Medical guilds and associations

Associations of doctors in various centers of the Greek world were connected with the cult of Asclepius, who was the god of physicians as well as of patients. In the Roman period there were medical guilds or *collegia medicorum*, as they were called. There is no evidence that these associations carried on formal medical education. But to the extent that they facilitated the interchange of ideas and experiences among doctors and served to maintain standards of practice, they had no small educational significance. Moreover, it is quite likely that such groups represented the interests of the medical profession before the emperor and were instrumental in obtaining de-

crees of the type I mentioned above.

Women in medicine

The role of women in ancient medicine was almost exclusively that of midwife, and most practitioners of this role had little more than a rudimentary practical training obtained from other midwives. Some physicians, however, sought to raise the level of the education of women in medicine. Beginning even in the pre-Hippocratic period treatises were written on obstetrics and gynecology, some indeed by women, and were, at least in part, designed for the education of midwives. Soranus of Ephesus, who in the first century wrote a treatise on obstetrics, gynecology and pediatrics that is still extant, devotes a considerable portion to the qualifications and duties of the midwife. The sources occasionally mention women studying medicine with eminent male physicians, and women doctors practising gynecology as well as obstetrics, but so far as I know, there is no mention of women engaged in the general practice of medicine.

Books and libraries

Though many a doctor must have been trained in antiquity with very few or no books, it is, as we have seen, the literary tradition that records the scientific development of medicine and makes possible its transmission to later ages. Books on medicine, many of them written for the general reader, circulated widely as early as the fifth century B. C. Centers of medical education, like those at Cos and Cnidus, in the earlier period, had their libraries; and it is not unlikely that the Hippocratic Collection of some seventy works on diverse medical subjects, written by

various authors from various viewpoints, represents such a library. With the founding of the great Alexandrian library, copies of old works and collections were transmitted there, and its resources were augmented by a never ending stream of new works and commentaries, as well as epitomes and anthologies of the old.

Yet, great as is the extent of ancient and medical writings, much greater than that of any other field of ancient literature, by far the greatest part has failed to survive. The literature of one of the most fruitful periods in medical history, the last three centuries before Christ, is known to us only in fragments. There is much that has been lost without even a trace. An inscription found by the merest chance tells us of a doctor who wrote 256 books; but not a single fragment of these books survives. Considerations such as these will again serve to emphasize the need of caution in historical reconstructions based on the fragmentary evidence that we happen to possess.

Summary

In tracing the course of medical education in classical antiquity we have found that, in the absence of effective control, there were the widest differences of standards; that though the craft aspect, and with it the traditional family education and system of apprenticeship, remained important throughout the whole period, yet, with the rise of philosophy and science, there was a movement that based the medical art on the new theories and new knowledge and had a profound effect on medical education. We have seen how this effect was heightened by the intense scientific activity of the early Alexandrian period and how, after a period of

sectarianism, there gradually developed a more or less standardized course of study, largely based on certain Hippocratic and Galenic books and commentaries.

Other chapters of the history of medical education will show how lasting was the influence of the ancient system of medicine, not only in its substantive contributions, but in its devotion to reason, in its attitude toward the relation between science and the medical art, in the terminology it developed, in its concept of disease and classification of diseases, in its ethical attitudes and standards, and in countless other ways.

BIBLIOGRAPHICAL NOTE

The present study is based on my earlier paper "On Medical Education in Greece and Rome," *Bulletin of the History of Medicine* 15 (1944) 333-351, from which I have quoted, with the kind permission of the publishers. References to the literature, ancient and modern, are contained in that paper and have not been repeated in the present one.

To the literature there cited I add two very valuable recent studies:

Ludwig Edelstein, "The Relation of Ancient Philosophy to Medicine," *Bulletin of the History of Medicine* 26 (1952) 299-316;

Owsei Temkin, "Greek Medicine as Science and Craft," *Isis* 44 (1953) 213-225.

La Educación Médica en la Antigüedad griega y romana

En este estudio, el autor Profesor de Lenguas Clásicas de New York City College, traza el desarrollo de la Ciencia y la Educación Médicas desde Hipócrates hasta el fin de la Antigüedad clásica. Durante aquel milenio había, en el vasto mundo mediterráneo, variaciones considerables en el nivel de los conocimientos médicos. Aunque el concepto tradicional de la práctica médica como arte u oficio continuó a través de toda la época antigua, con el auge de la Filosofía y la Ciencia surgió un movimiento que quiso basar la Medicina en nuevas teorías y conocimientos, y que ejerció un profundo efecto sobre la Educación Médica. Este efecto fué más

fuerte al comienzo de la época de intensa actividad científica de la cultura alejandrina. Alejandría se convirtió entonces en un gran centro de estudios médicos, y fué allí donde se hizo, por vez primera, la disección de cadáveres humanos. Florecieron entonces varias *sectas* médicas, las cuales, aun profesando gran variedad de doctrinas, tenían en común el método empírico. El siglo II A.D. vió la decadencia de estas sectas, y del empirismo, y la victoria de los *Dogmatistas* o *Racionalistas* representados por el gran filósofo, médico y hombre de ciencia, Galeno, cuya obra constituye el punto más alto a que llegó la Anatomía antigua.

Aunque la enseñanza de la Medicina, en el nivel más elevado, quedó principalmente en manos de los grandes maestros, empezaron a desarrollarse gradualmente escuelas y centros de instrucción médica, y con la extensión del control estatal romano surgieron en varios lugares instituciones que podríamos llamar Universidades, en las que la enseñanza médica también tuvo su lugar. El prototipo de la educación médica clásica, basado en la tradicional relación entre maestro y aprendiz, fué lentamente substituído por la relación entre profesor y estudiante. El ambiente universitario ayudó también a desarrollar otro tipo, muy diferente, de Educación Médica, basado en los estudios de Biología y Medicina, pero que no tenía el propósito de practicar

la Medicina, y cuyo solo fin era integrar todos los conocimientos. Ya en tiempos de Aristóteles se hacía una distinción entre el médico como artesano, como hombre de ciencia y el que estudia Medicina como parte de su educación, mas la inclusión de la Medicina como una rama importante de la educación ganó fuerza sólo en el período romano. El tratado de Celso, sobre la Medicina, es parte de un estudio enciclopédico de las cinco Artes Básicas, y fué escrito más para la educación del lego culto que para el médico profesional. Gradualmente se fué desarrollando, en la Educación Médica, un curso más o menos regularizado de estudios, basados principalmente en ciertas obras de Hipócrates y Galeno, y que incluía también, aunque en grado menor, los trabajos clínicos. El autor discute detalladamente la influencia de los *latrosofistas* griegos en la enseñanza médica; el papel del Estado en instrucción y práctica; la influencia de las Corporaciones o *collegia medicorum* en la época romana, y la importancia de los escritos científicos y de las bibliotecas. Al concluir anuncia que en subsecuentes capítulos se estudiará la influencia del sistema antiguo de Medicina sobre la Educación Médica Moderna.

Separatas de este artículo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

Editorials and Comments

Are We Exploiting the Resident?

MEDICAL educators, harassed by an ever-widening fund of scientific knowledge in the face of rather constant educational time periods, are in an evaluative turmoil in relation to curriculum and educational techniques. These time demands and curricular quandaries are not limited to the undergraduate medical years alone, but are also significantly related to the period of graduate clinical training. So rigid are these demands that even the brilliant student is caught in a treadmill sequence of time which envisions a long, drawn-out and fixed period of training preliminary to professional qualification. This situation is further compounded by the international tensions of the present and foreseeable future which have placed on the physician an obligation for varying periods of Federal service. Surely the young student aspiring to a career in medicine faces an academic chronology of formidable proportions.

Despite the oft-quoted vagaries relative to the physician's ability to practice until he "falls into his grave," statistics do not bear out the fact that this lethal fall is prolonged as far beyond the usual professional retirement age as one might wish. In other words, the educational program continues to encroach upon the professionally active span of the physician's life.

For the second year in a row, the combined number of interns and residents (31,028) has outnumbered the total of undergraduate students (28,748) enrolled in our medical schools. This phenomenal growth of the graduate clinical training program may be appreciated more fully when one considers the fact that before the war, in 1941, there were approximately 5,000 approved residencies in all fields; after the war, in 1947, this number doubled to approximately 10,000, and during the year 1955-56, there were over 21,000 residents actually in training.

In the interests of clarifying the perspective of cause and effect, a few comments relative to the changing philosophy of medical practice are in order. When medicine was faced with the realization that no one man could comprehend the entire broad scope of medical science, one of two alternative choices faced the physician. Either he must cover the general field of medicine in a more superficial manner or else limit his endeavors to a more or less specialized segment. The natural result of this selection was the development of the generalist and the specialist. The average time sequence in this situation depicted the generalist entering his professional career after a year or two of internship and the specialist doing likewise after the completion of an internship and a three or four year residency.

The complacency of this established pattern, however, is being disturbed to a considerable extent by the fact that medical science has not stabilized at this level of productivity and continues to explore the

unknown and to expand our scientific boundaries. Thus the specialist, unable to master a restricted area which until only recently was considered a rather narrow field of practice, now explores even narrower interests within his specialty. Similarly, the generalist finds the horizon of medical knowledge expanding so rapidly that each year his efforts to grasp a general cross-section results in a shallower yield.

The inevitable sequence to such a situation is the demand on the part of the physician for further opportunities in medical education. The would-be generalist is no longer satisfied with an internship, but rather now desires a general practice residency. The neophyte specialist, in like manner, seeks advanced training in his particular field within a field. As a result, this educational trend places ever-increasing quantitative and qualitative demands on the residency program. Is it not reasonable to expect that in the not-too-distant future the great majority of medical graduates will avail themselves of several years of residency training?

With a demonstrated steadily-increasing tide of residents in training, medical educators must face the realities of the economic stress to which the resident is exposed. While there are those who defend the stand that, in the interests of education, the resident should eschew the Spartan rigors of material self-denial and take the vows of celibacy, this approach does not bear up under the scrutiny of ordinary decency. Others point with a sense of academic smugness to the fact that the higher-quality residencies do not require the incentive of higher salaries, not appreciating the fact that by this very attitude they are discriminating against the resident with higher ideals and imposing an unjust economic and social burden on the very one who deserves encouragement.

The economic plea is not for a competitive salary with the individual in private practice, but rather for a living wage that permits the ordinary amenities of life, including the privilege of marriage before the age of 30. While educators are agreed that the primary and major function of a residency program is that of education yet, at the same time, it is evident that the resident contributes considerably in the area of hospital service, instruction and, to a varying degree, in research. This is not a one-way street. The resident is an essential component of the well-functioning hospital.

With the rising costs of hospital care, it is to be expected that many arguments will be raised against the practicality of a living wage for residents. Yet, unless this problem is solved realistically, medicine will continue to discriminate against many highly-qualified young men who are deterred from entering the medical profession because of the long, drawn-out period of training now necessary after graduation from medical school.

Some of us who were exposed to the economic rigors of residency training in "the good old days" may flaunt our varying degrees of success and self-esteem as evidence of the effectiveness of this method and moan rather realistically over the dangers of "lowering the bars," as though this economic winnowing was an efficient technique in separating the academic grain from the chaff. In the warm glow of self-righteousness, let us not forget that one of the early signs of cerebral anoxemia is the fear of change. Difficulty of achievement is not a valid excuse for the lack of interest in the correction of a real injustice. *Melvin A. Casberg, M.D., Vice-President for Medical Affairs, The University of Texas.*

Report of the Rockefeller Foundation

THROUGH THE YEARS, the Rockefeller Foundation has made noteworthy contributions to medical education in the United States and many other lands.

Recently, the Foundation reviewed and revised its program in line with the changing picture of public health.

The Annual Report for 1955, just released, sets forth the following objectives in the program for medical education: "to encourage the development of faculties with strong scientific orientation and a devotion to the responsibilities of teaching; to extend the scientific method into the clinical training of the student, with emphasis upon the integration of clinical disciplines and the development of a sympathetic understanding of the patient and his problems. In extending its assistance to the improvement of the quality of instruction in medicine and public health, the Foundation has recognized the inseparability of teaching and research and has encouraged the evolution of departments where the close interplay of these most fundamental aspects of academic life would have the greatest prospect of full development.

"Programs have meaning only in terms of people. One of the most essential activities of the Foundation is its provision for the advanced training of outstanding persons who may be expected to exhibit leadership in the educational systems of their respective countries. The numerous fellowships and travel grants provided contribute to the development of the professional personnel upon whom the entire expectation of a steadily improving medical care and public health practice must depend. Special studies in the United States have been supplemented on occasion by visits of the Fellow to other countries in order that he may apply to his own problems the most relevant methods and concepts."

The field services in medical education and public health are carried on through offices in Mexico City, Mexico; Rio de Janeiro, Brazil; Santiago, Chile; New Delhi, India and Tokyo, Japan.

Medical schools in such diverse locations as Santiago, Chile; Belo Horizonte, Sao Paulo and Ribeirao Preto, Brazil; Oxford, England; Lima, Peru; New York, Trivandrum, India and Montevideo, Uruguay received grants in 1955.

Travel grants permitted medical educators from Colombia, India, Japan, Turkey, Ceylon, England, Mexico, Jamaica, Lebanon, Australia, Sweden, the Philippines and the United States of America to review programs of medical education in other countries.

The program in medical education of the Rockefeller Foundation supports the aim of the Foundation—"The Well-being of Mankind Throughout the World." J. Z. B.

Medical Education Week

THE WEEK BEGINNING April 21 will be the second Medical Education Week, and medical educators country-wide will have an opportunity to focus public attention on the aims, problems and progress of medical education with the hope that increased understanding will result in more adequate support of medical education by the public.

That medical education is somewhat brash in setting up a "national week" for focusing on its particular aims and problems is undoubtedly true. But so rapidly are the demands upon medical schools increasing and so urgent are the needs, that medical educators are obliged to put their traditional modesty aside and to go directly to the public to tell them what has been accomplished, how much more lies ahead to be done, and what it is going to cost.

What then are some of the demands facing our medical schools? First is the demand that more physicians be produced. Our population is growing rapidly, the output of arts college graduates is expected to increase markedly, medical service is being considered more and more a necessity, less and less a luxury as medicine increases its specific remedies. Three of our former two-year schools (Mississippi, Missouri and West Virginia) are expanding to four-year schools; four completely new four-year schools (Albert Einstein, Seton Hall, University of Florida, University of Kentucky) are in development. But this is not enough; more new schools will be needed and many of the older schools will need funds to rehabilitate, expand, or replace obsolete buildings and equipment.

Second, but almost as urgent as the need for more physicians is the need for more nurses, medical technologists and paramedical workers of all types. Third, and particularly urgent is the need for specially trained scientists and technicians to work in the rapidly growing research fields relating to the antibiotics, the radio-isotopes, enzyme chemistry, electrolyte and water balance and many others.

If medical schools are to meet their full responsibility to society they must continue to lead the way in research and the development of new knowledge as well as in propagating old knowledge.

A fourth demand requires each medical school to serve as a consultation and refresher course center for the physicians of its area. Medicine is a life-time study, and continuation education for all physicians in practice is accepted as a fundamental responsibility of the modern medical school.

What are the medical schools doing to make it possible to meet these demands? They have made their needs known to industry and large corporations, and the National Fund for Medical Education is busily engaged in promoting corporate giving in support of increasing operating budgets of medical schools. They have made their needs known to the practicing profession and the American Medical Education Foundation has an active program stimulating annual gifts of physicians. They have made their needs known to the Federal government and a bill designed to provide Federal assistance in expanding medical school teaching facilities, to supplement the aid to research facilities provided last year, is being prepared. Student tuition in medical schools was increased this past year from \$646 to \$684 (average) for residents, from \$807 to \$857 (average) for non-residents. Agencies which have been in the habit of sponsoring research projects in medical schools are seriously considering increasing the overhead allowance to permit its covering all the indirect costs of the research to the school.

How can the schools help to inform the public concerning their needs and progress? They can make good use of the press, radio and television. They can request the opportunity to provide speakers for service clubs and all types of organized community groups. They can plan "open house" or tours of their facilities for the public.

Medical Education Week provides an unusually good opportunity to focus the attention of the public upon medical education. But basic to increasing the public's understanding and support of medical education is the full realization on the part of all medical educators that they have a real and continuing responsibility to keep the public fully informed about their school's progress and needs every day throughout the year. D. F. S.

Statement from the Society of University Surgeons

At a recent meeting of the Society of University Surgeons, it was voted to send the following statement to the Journal of Medical Education:

"THE SOCIETY of University Surgeons wishes to notify the Council on Medical Education and Hospitals, the American College of Surgeons and the Association of American Medical Colleges of its belief that the properly trained and licensed surgical resident is fully capable of performing surgery, with the consent of the patient, and that charges for this service should be recognized by insurance, governmental and other agencies."

NEWS DIGEST

Actions Taken at AAMC Executive Council Meeting February 8-9

1. The membership of the Advisory Committee to the Institute of International Education, consisting of Dr. Duncan W. Clark, Dr. Lawrence Hanlon, and Dr. Ralph E. Snyder, was increased to include Dr. James E. McCormack, Dr. Raymond S. Jackson and Dr. John Beal.

2. Appointed as Association of American Medical Colleges' representatives to an American Medical Association committee studying "What is the best preparation for general practice?" were Dr. W. Clarke Wescoe, Dr. William Mulholland and Dr. R. H. Kampmeier.

3. Appointed as AAMC representatives to meet with representatives of an American Medical Association committee reporting recently on terms of employment of full-time clinical teachers in medical schools, were Dr. Lowell T. Coggeshall, Dr. Robert A. Moore, and Dr. John B. Youmans.

4. The Executive Director was instructed to ask the Committee on Continuation Education to review the Council on Medical Education and Hospitals' recent statement in regard to the Objectives and Basic Principles of Postgraduate Medical Education. If there are items with which Continuation Committee members are in disagreement they will be brought to the Liaison Committee on Medical Education for discussion.

(The Executive Council expressed its active interest in and feeling of shared responsibility for the development and improvement of postgraduate medical education.)

5. Upon the recommendation of Dr. Stockton Kimball and after a review of the history of the various committees dealing with national defense problems the following committee structure was voted:

- (a) The Joint Committee on Medical Education in Time of National Emergency is to be abolished (subject to similar action by the Council on Medical Education and Hospitals).
 - (b) The Association's present Committee on Planning for National Emergency is to be renamed "The Committee on Medical Education for National Defense."
 - (c) The present Subcommittee on Medical Education for National Defense of the Joint Committee will be made a subcommittee of the new Association's "Committee on MEND" and entitled "The Subcommittee for the MEND Program."
 - (d) If joint action of the AAMC and the Council on Medical Education and Hospitals is required the Liaison Committee on Medical Education will appoint a subcommittee for the purpose.
6. The Secretary reported that he had received the information from all medical schools (with the exception of three) as requested by Kurt Borchardt for the use of the House Committee on Interstate and Foreign Commerce. All material has gone on to Mr. Borchardt and will be incorporated in his printed report, supporting the need for federal aid to medical school construction.
- The Secretary was instructed to attempt to get reports from the three missing schools and to request that deans who have not consulted their president before submitting their estimates do so now.
7. The Secretary reported that 63 medical schools state that:
- (a) They are now taking 231 transfer students into their third year class.

- (b) They could increase their transfer admissions to the third year class by 233 students.
- (c) The total places in the third year class for transfer could be increased to 464.

8. The following statement was approved:

"It is the conviction of the Executive Council of the Association of American Medical Colleges:

- (1) That agencies, governmental or private, making research grants should cover the indirect as well as the direct costs of the research;
- (2) That the current allowances for overhead almost universally fail to cover the full indirect costs of research;
- (3) That because of the inadequate overhead allowance on research grants many critical financial situations exist in our medical schools and universities.

"The Executive Council therefore expresses the hope that action on this important matter, which has so long been under discussion, will be taken promptly."

MEND News

A conference of deans and coordinators of MEND-affiliated medical colleges was held in Chicago on Sunday, February 10, in connection with the Congress on Medical Education and Licensure. A group of 57 was introduced to the MEND-sponsored activities planned for the balance of the current academic year, and participated in discussions of local MEND activities. Among the events which were introduced as MEND activities scheduled for the spring was the annual orientation tour for deans and coordinators. This included visits to military medical activities in various parts of the country during the period March 20-30, and terminated in Houston, Texas, where four participants took part in a field test of the FCDA 200-bed Emergency Hospital.

This field trial of the FCDA hos-

pital, which was conducted during the period March 28-30, was a civilian sponsored and conducted test featuring the "treatment" of some 500 simulated casualties resulting from a "nuclear blast" of Houston. Participants in this exercise included the University of Texas Medical Branch (Galveston), the Baylor University College of Medicine (Houston), county medical societies of the Houston-Galveston area, and the MEND program.

Also announced were two MEND-sponsored symposia. The first of these is a joint Navy-Air Force program on the subject of "Man and His Environment." *Part I*, "Submarine and Diving Medicine," will be conducted at the Navy's Experimental Diving Unit in Washington, D. C. *Part II*, "Man in an Airborne Environment," will be presented at the Aero Medical Laboratory at Wright-Patterson Air Force Base. Dates of this symposium are April 1-5.

The second MEND-sponsored symposium will be presented on April 15-17 by the Army at the Walter Reed Army Institute of Research in Washington, D. C., and will deal with "Preventive and Social Psychiatry."

MEND would like to call the attention of those concerned with the problems of disaster medicine to two recent publications. One is "Emergency Medical Care in Disasters, A Summary of Recorded Experience." This National Academy of Sciences-National Research Council Disaster Study No. 6 represents a resume of previous studies and includes an extensive bibliography. Copies may be purchased from NAS-NRC at \$1.50 each. A second publication worthy of note is the January 1957 issue of the *Annals of the American Academy of Political and Social Science*, which is devoted to "Disasters and Disaster Relief."

Most recent MEND publication is the "MEND Reference List," a bibliography of some 600 publications and articles related to military and disaster medicine. The "Reference

List" has been distributed to all MEND-affiliated medical colleges, and copies are being sent to schools which are not presently MEND-participating.

Conference on "Tomorrow's Challenges"

A conference on "Tomorrow's Challenges to the Medical Sciences" was held on March 4-5 in the Oriental Institute of the University of Chicago. The conference, sponsored by the National Fund for Medical Education in cooperation with the International Harvester Foundation, and the U. S. Steel Foundation, Inc., was attended by representatives of 82 corporations and seven medical schools, with Dr. James B. Conant, former president of Harvard University and recent American ambassador to West Germany, presiding. Speakers included John M. Stalnaker, president of the National Merit Scholarship Corporation; Dr. Lowell T. Coggeshall, dean of the biological sciences division, University of Chicago; Dr. George Packer Berry, dean of the Harvard Medical School, and Dr. Vernon W. Lippard, dean of Yale University College of Medicine.

Internship Pilot Program

Fourteen June graduates of medical schools approved by the AMA will report for duty at the U. S. Army Hospital, Fort Benning, Ga., July 1, to inaugurate the first internships yet instituted for the Army's Class I hospitals. This will be a "pilot" program directed toward the introduction of such training in other hospitals of this classification.

Starting date will be September 3, for the fifth class of Military Medicine and Allied Sciences presented annually by the Walter Reed Army Institute of Research to develop qualified professional leadership at Army medical research, teaching and treatment centers. Fifteen medical officers who have completed formal residency training in a specialty will be selected for the nine-month course. The students will be guided into a broad pattern of many subjects by a resident and visiting faculty of Army, Navy, Public Health and other government authorities and by lectures from many of America's universities and from Europe.

College Briefs

Baylor

Dr. WILLIAM A. SPENCER has been appointed professor of rehabilitation and chairman of the newly reorganized department of rehabilitation. A member of the faculty since 1950, Dr. Spencer is director of the Southwestern Poliomyelitis Respiratory and Rehabilitation Center and has served as assistant professor in the departments of pediatrics and physiology.

Chicago Medical

Dr. CLARENCE COHN has been appointed associate professor of clinical pathology. Dr. Cohn has been director of the department of biochemistry at Michael Reese Hospital since 1946.

Dr. EDWIN M. JAPHA has been appointed clinical assistant professor of radiology. Dr. Japha received the Senior Brodership Scholarship from Middlesex Hospital Medical School in England (1937) and was a James

T. Case lecturer to Northwestern University in 1954.

Columbia

Dean WILLARD C. RAPPEYE has been cited by the Federation of State Medical Boards for "early and continued leadership in promoting the welfare of the medical profession." The award was conferred on Dr. Rappeye at the recent annual dinner of the Federation of State Medical Boards of the United States at the Palmer House in Chicago during the 53rd Annual Congress on Medical Education and Licensure.

Duke

Dr. LESLIE B. HOHMAN, professor of psychiatry, was recently installed as president of the American Psychopathological Association, succeeding Dr. HOWARD S. LIDDELL of Cornell University. Installation ceremonies were held at a two-day meeting devoted to study of "Problems of Drug Addiction." Dr. Hohman is a former president of the National Academy of Cerebral Palsy and currently heads the North Carolina Society for Crippled Children and Adults.

Georgia

Dr. WALTER G. RICE, associate professor of pathology, has been awarded a grant of \$6,238 by the National Cancer Institute for the continuation of his special research program on cancer.

WILLIAM D. BORING, Ph.D., assistant professor of medical microbiology and public health, has received a grant in the amount of \$12,736 for 1957, which will be renewed for two additional years at \$10,350 per year. The grant, made by the National Institute of Allergy and Infectious Diseases, will support research on factors influencing host-virus interactions.

Dr. HARRY B. O'REAR, dean of faculty and professor of pediatrics, and W. KNOWLTON HALL, Ph.D., professor and chairman of the department

of biochemistry, are the recipients of a \$7,590 grant, renewable for two additional years, from the National Institute of Arthritis and Metabolic Diseases for their project "A Study of Oxalate Metabolism."

Illinois

Gifts and grants totaling \$983,-813.63 were received by the University during 1956 to promote and support medical research and education. The figure represents an increase of \$392,460.63 over the year 1955. Funds received in 1956 were presented by federal government agencies, private industry, foundations, other organizations and individual donors.

The Public Health Service has recently made grants to the school totaling \$38,151; largest of these went to Dr. SAM S. BARKULIS of the department of biological chemistry for a study of L forms of group A hemolytic streptococci—biochemical, metabolic and pathogenetic properties.

Jefferson

Dr. SAMUEL S. CONLY Jr. has been appointed assistant to the dean. Dr. Conly has been on the teaching staff since 1953 and serves also as associate professor of physiology.

Minnesota

Dr. CLAUDE R. HITCHCOCK, associate professor of surgery, has been named chief of surgery at Minneapolis General Hospital, succeeding Dr. O. J. CAMPBELL, clinical professor of surgery. Dr. Campbell has been named chairman of the surgery department.

Dr. MALVIN J. NYDAHL, clinical assistant professor, division of orthopedic surgery, has been appointed chief of orthopedics, replacing Dr. JOHN H. MOE who recently became professor and director of the division of orthopedic surgery.

S.U.N.Y.—Syracuse

Dr. BERNARD LEVINSON has been appointed director of medical education, effective July 1, and will also become instructor in medicine at that time. Dr. Levinson will be suc-

ceeding Dr. EDWARD HEITZMAN, who is entering private practice, though remaining on the faculty as clinical instructor.

North Dakota

A far-reaching program, designed to assist North Dakota communities in obtaining needed medical practitioners under the state Medical Center program, has been introduced in the current session of the legislature. The measure provides for loans to graduates of the school to assist them financially to complete their third and fourth years of training at schools outside the state. In return for the financial assistance, the student would agree to return to North Dakota to practice medicine upon completion of his training.

A grant of \$7,290 from the Office of the Surgeon General, Department of the Army, has been awarded to Dr. W. E. CORNATZER, head of the biochemistry department, for continuation of his research grant entitled, "The Study of Lipid and Protein Metabolism in Liver Disease." Dr. Cornatzer had been awarded a \$6,804 grant for the study of the liver from the Atomic Energy Commission and a \$2,000 grant from the Lipotropic Research Foundation

Pennsylvania

An award of \$343,800 to the Hospital of the University of Pennsylvania for specific research during the next three years has been received from the John A. Hartford Foundation, Inc. The grant is designated for support of three new research projects in the department of medicine and surgery. The programs will be carried out under the direction of Dr. I. S. RAVDIN, John Rhea Barton professor of surgery and chairman of that department; Dr. FRANCIS C. WOOD, chairman and professor of medicine, and Dr. ROBERT O. DRIPPS, chairman and professor of anesthesiology.

Tennessee

Dr. GLEN M. CLARK, instructor in medicine and director of the Arth-

ritis Research Unit at the University of Colorado College of Medicine, has joined the staff as assistant professor of medicine.

Dr. JAMES G. HUGHES, professor of pediatrics, has been made an honorary professor of the University of San Carlos of Guatemala. The ceremonies were held in Guatemala City recently in conjunction with the Third Central American Pediatric Congress, attended by physicians from Mexico, Central America, South America and Europe. Dr. Hughes attended as the official representative of the World Health Organization.

Washington—St. Louis

The university is planning to build a new rehabilitation institute to serve disabled persons in the St. Louis metropolitan area and will train personnel in rehabilitation procedures and develop new methods of treatment. An active research program relating to chronic disabilities will also be carried on. The institute, to be named for the late Mrs. Irene Johnson, one of the principal donors of funds, will house the departments of physical and occupational therapy, now located in other buildings in the Medical Center. Dr. ROBERT E. SHANK, professor of preventive medicine in the school since 1948, will be director of the institute. Construction of the building is slated to begin before next July at a cost of approximately \$675,000.

Wisconsin

The medical school will dedicate the Bardeen Medical Laboratories on May 17. This unit, named for Dr. Charles Bardeen, first dean of the medical school, will afford space for the department of anatomy and physiological chemistry. The entire top floor will contain animal quarters. The dedication will coincide with Alumni Day and speakers will include Dr. Eugene Opie, Dr. George Corner and Dr. Willard Rappleye.

Dr. HERWIG HAMPERL, professor of pathology and director of the Institute of Pathology, University of Bonn, Germany, has been designated Carl Schurz Professor of Pathology for the second semester of the academic year 1957.

West Va.

Installation of equipment and furniture in the \$10,675,000 Basic Sciences Building of the new West Virginia University Medical Center is nearing completion and the school of medicine will move into this building during the last week of June. This is the first step in the expansion of the school of medicine from a two-year to a four-year school. The Basic Sciences Building will house all the preclinical departments as well as facilities for the schools of dentistry, nursing, and pharmacy, and training in allied specialties. The school of medicine has recently announced the acceptance of 40 applicants, nine more than customary, for the opening of classes next September in the new building.

Woman's Med. Coll.

Dr. PHYLLIS A. BOTT, professor of physiological chemistry, has recently received a renewal of a research grant from the Life Insurance Medical Research Fund to continue her work in kidney physiology. The grant is for \$29,700 for a period of three years.

Yale

The Center of Alcohol Studies has received a grant of \$80,291 for a new research program aimed at devising a yardstick for measuring the results of treatment of alcoholic cases in out-patient clinics. The grant, covering the initial two years of the project, has been given by the National Institute of Mental Health of the Public Health Service. The research team at Yale will include Professor SELDEN D. BACON, Associate Professor RAYMOND G. MCCARTHY, and Mrs. EDITH S. LISANSKY. Collaborating with the Yale staff will be the following New York University faculty members: Dr. DONALD L. GERARD, Professor GERHART S. SAENGER, and Miss RENEE WILE. Dr. Gerard and Professor Saenger will be principal investigators for the project.



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Audiovisual News

Two New Film Catalogs

Twenty-nine surgical teaching films are available from the American College of Surgeons and are described in *American College of Surgeons Motion Picture Library—1956 List*. The library is being supported by a \$50,000 grant from Ethicon Incorporated.

The ACS list is not to be confused with *Medical Motion Pictures Approved by the American College of Surgeons—1956* which is also available from the College headquarters, 40 East Erie Street, Chicago 11, Illinois.

Also new is *Film Reference Guide for Medicine and Allied Sciences* prepared by the Interdepartmental Committee on Medical Training Aids. The Guide contains both a subject index and an alphabetical listing of films.

The criteria for inclusion of each film in the Guide are:

1. The film must be of use in the medical program of at least one of the member agencies of the Interdepartmental Committee on Medical Training Aids
2. The film must be currently available for borrowing or rental from some source

The Guide is prepared by the Library of Congress. It is printed semi-annually in July and January, whereby each new issue will replace the previous one. Copies are available from: Card Division, Library of Congress, Washington 25, D. C.

Supplement to MAVI Film Catalog

The Medical Audio-Visual Institute has published a Supplement to go with *Films, Fall 1955 Catalog*. The Supplement contains descriptions of the films which have been added to the library since the publication of the first catalog.

Copies of the supplement are being mailed to all users who received the first catalog. Additional copies of both the catalog and the supplement are available for departments or individuals desiring them. Write to the Medical Audio-Visual Institute of the Association of American Medical Colleges, 2530 Ridge Avenue, Evanston, Ill.

A Catalog of Health Teaching Tools

Exhibits, models and slides available from the Cleveland Health Museum are cataloged in *How To Make Health Visible*. Direct inquiries to Dr. Bruno Gebhard, Director, 8911 Euclid Avenue, Cleveland 6, Ohio.

Rapid Slide Making

The Polaroid Corporation claims a photographic system which makes it possible to take a photograph in black-and-white and project it on the screen two minutes later. The transparencies provide a virtually grainless image for sharp projection. It is stated that the cost is about 56 cents per finished mounted slide.

As an example of how the transparencies may be used, Polaroid Corporation cites Boston hospital. "Skin disease patients, brought into a classroom with 50 or more students, are photographed with closeup equipment. Pictures of diseased areas (a hand, foot, thigh) are immediately projected 10 feet square, giving each student a close look at the problem. . . ."

For details about the system, known as the Polaroid Land Transparency System, write Industrial Sales Dept., Polaroid Corporation, Cambridge 39, Mass.

Technical TV Items

Inexpensive color television may be possible in 1958. A color tube

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This instrument is used in many of the leading medical schools for teaching electrocardiography and auscultation by audiovisual demonstration. The electrocardiogram, heart sounds and other physiological phenomena—vectorcardiogram, EKY, BCG, intracardiac blood pressure—may be shown continuously on the 16" picture tube coated with a long persistence screen. Simultaneously the related heart sounds of the patient may be heard, through individual stethophones by the group viewing the physiological data.

A special high fidelity tape recorder provides means for permanently recording heart sounds as they are heard through the stethoscope. These tape recordings (in lieu of patients) may be played back at any time. The Recorder also facilitates collection of a library of pathological heart sounds. An entire lecture including illustrative heart sounds may be recorded and subsequently viewed and heard over the stethophone circuit.

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known as the Lawrence tube is being developed for the military to use for plane identification purposes. When the bugs are worked out of the tube it will be placed on the market.

Better kinescope film is being marketed for recording of television programs. The film, sold by Du Pont, is said to be $2\frac{1}{2}$ times faster than the kinescope film it replaces.

Eight Videotape Recorders are now in use by CBS and NBC. The Videotape Recorders make it possible to tape the video as well as the audio of a live television program. One roll of tape holds a 60-minute program for delayed or repetitive broadcasts, thus replacing film. The Videotape Recorder was introduced last year by Ampex Corporation.

10,000 Slides

The Medichrome Catalog of Clay-Adams now lists over 10,000 slides available "for teaching in the medical, nursing and biological sciences." The slides consist of photomicrographs, clinical photographs and photographs of gross specimens. With the exception of X-rays and some black and white the slides are all in color. The prices of the slides vary from 75¢ to \$1.50. Write Clay-Adams, 141 East 25th Street, New York 10, N. Y.

Film on Medical Education Danger at the Source

13½ min., sd., b&w., 16 mm., 1956.

"Danger at the Source" is the title of a film produced by 20th Century Fox Films for the National Fund for Medical Education.

The purpose of the film is to gain private support for the nation's medical schools and teaching hospitals, it shows medical students in many learning situations including laboratory research, ward rounds, clinical investigation and in a teaching surgical gallery where television is used to provide immediacy and magnification. Visual emphasis is given to situations that demand small classes and expensive equipment.

The case of the need for more

money for medical education is presented with dignity and effect.

Audiences include executive and industrial groups, women's organizations, schools, clubs and discussion groups.

For loan or purchase write: FILM, National Fund for Medical Education, 2 West 46th Street, New York 36, N. Y.

Teacher Productivity and AV

Teacher productivity and audio-visual tools are the subject of an editorial by James D. Finn in the Winter 1956-57 Issue of *Teaching Tools*.

Teacher productivity is defined as "a measure of the quality and amount of learning that takes place in the classroom." Present concern with multiplying knowledge and a growing student population is stimulating new experiments in educational methods aimed at increasing teacher productivity. In the meantime proven means—AV materials and equipment—have been only partially exploited, says Dr. Finn.

World War II provided "a vast reservoir of experience in the area of teacher productivity and educational efficiency which has, for the most part, remained untapped." Schools have only partially tooled up for the job. There is not enough equipment and materials so that they are *where* they are needed *when* they are needed. Teachers and pupils are not provided with an environment in which the proper acoustical and light control elements, etc. are present. And, inadequate specialized help in utilization, local production and distribution is provided the teachers.

Dr. Finn pleads for money and energy to tool up for what we know about the economics of learning. When we have done this we can look around for other ways to increase teacher productivity. Some of these ways may also include audio-visual materials, such as films or television used with much larger classes.

Johnston—Regional Anatomy

By **T. B. JOHNSTON, C.B.E., M.D.**

Emeritus Professor of Anatomy, University of London,
Guy's Hospital Medical School

NEW 8th EDITION. Dr. Johnston's book offers a thorough review of anatomy for those who have studied the subject with the aid of a standard text, such as Gray's Anatomy, and have had dissecting room experience. The author stresses those facts which are of increasing importance in medical and surgical practice. The arrangement of material, which has proved to be so helpful to students, is retained.

New 8th Ed. 450 Pages, 5¼" x 7¾". 20 Plates and 19 Text Figures. \$6.00

Gray's Anatomy

By **HENRY GRAY, F.R.S.**

Edited by **CHARLES MAYO GOSS, M.D.**

Managing Editor of the Anatomical Record; Professor of Anatomy,
Louisiana State University School of Medicine, New Orleans, Louisiana

26th EDITION. The great success of Gray's Anatomy of the Human Body lies in its effectiveness as a text for students and in its practical value to physicians and surgeons. It is unequalled in arrangement, authority, and accuracy. In the 26th edition the sequence of presentation corresponds more closely to the modern approach to the study of anatomy. Legends of all illustrations are in large, easy to read type. With few exceptions, BNA nomenclature is used throughout.

26th Edition. 1480 Pages, 7" x 10". 1202 Illustrations, Mostly in Color. \$16.00

Bell—Textbook of Pathology

By **E. T. BELL, M.D.**

Emeritus Professor of Pathology, University of Minnesota, Minneapolis
AND CONTRIBUTORS

NEW 8th EDITION. Throughout this textbook, pathology is presented in a manner that enables students to approach clinical medicine as a direct continuation of their pathological studies. To meet every requirement of students in clinical training, the subject is presented as a living science that explores the nature and causes of disease on which all successful practice of medicine must be based. Revised and brought up to date for this edition, the text reflects every advancement in the field. Changes and additions were made in every chapter, particularly in those which consider the anemias, hemorrhagic diseases, diabetes, hemochromatosis and renal diseases.

New 8th Edition. 1028 Pages. 545 Illus. and 5 Plates in Color. \$14.50

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Book Reviews

Diseases of the Skin

Richard L. Sutton Jr. The C. V. Mosby Co., Philadelphia 1956. 1497 pp. with illustrations. \$29.50.

This new text by Richard L. Sutton, Jr. is an outstanding reference work on dermatology and it should be a part of every graduate student's library. The book has been thoroughly modernized and is all-inclusive. The pictures are generally excellent and in good focus. There is an illustration for almost every condition the author describes. The written descriptions of lesions have been carefully worded to present an unmistakable picture wherever possible. The author has continually stressed the relationship of cutaneous lesions to systemic disease.

Dr. Sutton has carefully avoided an opinionated text and thereby escapes the label of dogmatism which is frequently applied to textbook authors. The chapter dealing with pyogenic infections unnecessarily includes staphylococcal infections and streptococcal dermatoses under separate headings. Postular psoriasis should not be included with this group of diseases in view of the fact that these pustules are almost invariably sterile. More recent studies indicate that keratosis blennorrhagica is not due to gonorrhea.

In a critical review it is easy to select points of disagreement in any text, however, this book generally meets the requirements of a good text on dermatology.

Harry M. Robinson Jr., Maryland

Functions of Autonomic Transmitters (The Abraham Flexner Lectures)

J. B. Burns, Williams & Wilkins, Baltimore, 1956.

This small volume is sharply subdivided into two sections: (1) chapters on 'Medical Education and Medical Science' and on 'Our National Drugs—Alcohol and Nicotine,' and (2) five detailed chapters directly related to the title of the book. It is in the latter that Professor Burns is on home ground, and these chapters contain a wealth of thought provoking material. They are organized around studies conducted in the author's

laboratories at Oxford, and are not intended to be comprehensive reviews. In each chapter the primary emphasis is on the development of a basic, and not infrequently unorthodox concept of physiological regulation or drug action. Experimental data, selected to illustrate and support the ideas being developed, are presented in some detail, and the vagaries of experimental methods are not neglected. However, the central theme is always the author's interpretation of the observations.

Few workers in the field will fail to disagree with some of Professor Burn's concepts, and some will disagree with many of them. I am sure that such reactions are anticipated by the author. However, disagreement on details will not cloud the importance of his forceful presentation of basic and often-forgotten points such as the probable nonmediator roles of acetylcholine and the multiple actions of drugs. Perhaps most important, between the lines of data and speculation the reader can obtain a clear picture of the scientific personality of one of the most stimulating of contemporary pharmacologists.

Mark Nickerson, Manitoba

ANATOMY FOR SURGEONS The Thorax, Abdomen and Pelvis

W. Henry Hollinshead, Hoeber-Harper, New York, 1956. 934 pp. with illustrations.

This volume is the second of three volumes and describes the thorax, abdomen, and pelvis. The author, free from the encumbrances of a previous edition, has adopted a clinical approach to the subject and space is devoted to regions in proportion to their current importance in surgical practice. A discriminative rather than exhaustive anatomical exposition, conversational style, and abbreviated discussions of pertinent surgery, physiology, and embryology contribute toward making this a treatise which is easily read. The compromise in nomenclature contained in the book should offend neither the devotee of B.N.A. nor of operating room parlance. Most of the illustrations are diagrammatic, and the clarity of simplicity has been obtained at the expense of the

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By Lauren V. Ackerman, M.D., Professor of Surgical Pathology and Pathology, Washington University School of Medicine. 836 pages, 913 illustrations, 1953. \$14.50

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By Francis Heed Adler, M.A., M.D., F.A.C.S., William F. Norris and George E. deSchweinitz, Professor of Ophthalmology, School of Medicine, University of Pennsylvania and Consulting Surgeon, Wills Hospital, Philadelphia. 2nd edition, 734 pages, 329 illustrations, 3 in color, 1953. \$13.00.

CORDONNIER

Clinical Urology for General Practice

Common urological problems future doctors will most likely meet. This text stays away from the rare cases, only recognizing them as belonging in the realm of the specialists. Consequently students do not have to wade through ponderous scientific data on disturbances they will probably never treat. Very practical for the student in his busy schedule. In use in a large number of medical schools.

By Justin J. Cordonnier, M.D., F.A.C.S., Professor of Urology, Washington University School of Medicine. 252 pages, 47 illustrations. \$6.75.

beauty encountered in anatomical works of the past, a substitution of debatable advantage. A number of clinical as well as morphologic listings are contained in the bibliographies. The format is pleasing, the paper dull, the book is light for so large a volume, and the contents should be a valuable addition to the library of those who desire an interpretive textbook of regional anatomy.

Walter J. Burdette, *Saint Louis*

Getherceal and Wirth Pharmacognosy 3rd Edition

Edward P. Claus, Lea and Febiger, Publisher, Philadelphia, 1956.

The third edition of this text is a complete revision. The monographs of drugs have been brought up to date with the United States Pharmacopeia, 15th revision, and the National Formulary, 10th Edition.

The most significant change in the third edition is in the presentation of the subject matter. The authors of the first and second editions used the taxonomic approach to the study of crude drugs. The present author has used the chemical approach. Because of this, the subject matter is divided into chapters discussing all of the crude drugs containing the same type of active constituent (i.e. alkaloid, glycoside, etc.). At the beginning of each chapter there is a general discussion of the chemical

properties of the constituent discussed in the chapter.

New chapters have been added to discuss endocrine products, vitamins, enzymes, proteins, antibiotics, immunizing biologicals, allergens and allergenic preparations, and pesticides. Although much of the older and extraneous material present in the former editions has been deleted, these new chapters have kept this edition approximately the same length as the second edition. An important addition to the individual monographs is the inclusion of a list of common commercial products containing the drug outlined in the monograph.

This is a very well written textbook easily adapted for use in pharmacognosy classes. Besides this, the book contains enough information about plant drugs to be a very fine reference for those people interested in plant drug research. Appendix II contains an excellent key for the identification of powdered drug material.

Chapter 16 contains a very good introductory discussion of plants causing various types of allergies. This chapter should have been extended, or another chapter written, to discuss the more important and widespread poisonous plants found in the United States. A chapter such as this would be an invaluable aid to both the physician and pharmacist.

Richard L. Workman Jr., *Utah*

BOOKS RECEIVED

Bone Structure and Metabolism (Ciba Foundation Symposium)

Edited by G. E. W. Wolstenholme and Cecilia M. O'Connor
Published by Little, Brown and Co., Boston
—1956
299 pp with index

Sequeira's Diseases of the Skin (Sixth Edition)

Edited by John T. Ingram and Reginald T. Brain
Published by The Macmillan Co.—1957
843 pp with index

Integrated Anatomy and Physiology

Francis-Farrell
Published by C. V. Mosby Co.—1957
641 pp with index

Medicine in a Changing Society

Edited by Ingo Galdston, M.D.
Published by International Universities Press, Inc.—1956
166 pp with index

Clinical Use of Radiolabels

Edited by William H. Bellerwalter, and Philip C. Johnson, and Arthur J. Solari
(Univ. Hosp., Ann Arbor, Mich.)

Published by W. B. Saunders Co.
456 pp with index

The Physician-Writer's Book

Richard M. Hewitt—Mayo Fdn.
Published by W. B. Saunders Co.—1957
415 pp with index

Pediatric Cardiology

Edited by Alexander S. Nadas (Harvard Med. School)
Published by W. B. Saunders Co.—1957
587 pp with index

Modern Operative Surgery

Edited by G. Grey Turner and Lambert Charles Rogers (4th Ed. in 2 vols.—Vol. II)
Published by Paul B. Hoeber, Inc.—1957
2614 pp with index

Connective Tissue in Health and Disease

Edited by G. Ashoe-Hansen
Published by Philosophical Library, Inc.—1957 (printed in Denmark)
321 pp with index

Symposium of Pathology

Edited by W. A. D. Anderson
Published by The C. V. Mosby Co.—1957
829 pp with index

The Personnel Exchange

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• **BIOCHEMIST:** Instructor or assistant professor of biochemistry; in mid-western medical school at rapidly growing medical center. Excellent opportunity for combined teaching and research. Appointee to participate in research program of the department. Rank and salary dependent on qualifications. This appointment is immediately available. Address: V-53.

• **NEUROLOGIST:** Position available immediately for Board certified or Board eligible neurologist. Appointment includes staff membership in large clinic group as well as on staff of teaching hospital with medical affiliation. Apply to Administrator, Guthrie Clinic, Sayre, Pennsylvania.

• **ASSISTANT PROFESSOR OF PREVENTIVE MEDICINE:** Full-time position teaching, research and some administration. Apply stating qualifications and salary expected to Dr. J. J. Day, Professor of Preventive Medicine, University of Ottawa, Ottawa, Ontario.

• **MEDICAL BACTERIOLOGIST:** Assistant or Associate Professor of Bacteriology for the Department of Bacteriology, Faculty of Medicine, University of Ottawa, Canada. Rank and salary dependent upon qualification and experience. Address inquiries to R. J. Gibbons, M.D., professor of bacteriology.

• **MICROBIOLOGIST:** Experimental. To participate in medical school group research activity and to pursue personal interests in virology and immunology. Full-time. Salary dependent on qualification and experience. Address: V-54.

• **APPROVED RESIDENCY IN MEDICINE:** in new research hospital for cancer. Excellent facilities for clinical training. Active investigative program in hematology, metabolism, cancer chemotherapy. Affiliation with medical school. Salary \$3600-\$4100. Write chairman, medical

residency committee, Roswell Park Memorial Institute, Buffalo, N. Y.

• **INSTRUCTORSHIP IN PHYSIOLOGY:** Could be filled by recent Ph.D. in physiology, biochemistry or pharmacology. Or M.D. interested in career in basic science. Teaching and research. Salary range \$5,500 to \$6,500 according to qualifications. Address: V-55.

• **APPROVED RESIDENCY IN MEDICINE:** In new research hospital for cancer. Excellent facilities for clinical training. Active investigative program in hematology, metabolism, cancer chemotherapy. Affiliation with medical school. Salary \$3600-\$4100. Write chairman, Medical Residency Committee, Roswell Park Memorial Institute, Buffalo, N. Y.

• **ANATOMIST:** Urgent, full-time and permanent position open for 1957-58; want a person capable of undertaking a major share of gross anatomy instruction; unrestricted research, salary range \$6,000 to \$8,000 depending upon age, qualifications and experience. Address: V-56.

• **ASSISTANT PROFESSOR OF PHARMACOLOGY:** Applications effective not later than September 1. Salary \$5,000 to \$6,200 per annum, with annual increments of \$300. Duties include undergraduate and graduate teaching and a program of research. Applicants possessing a medical degree, in addition to qualifications in pharmacology, will be given preference. Applicants should supply a photograph, curriculum vitae, and three references. Apply to Dean of Medicine, University of Alberta, Edmonton, Alberta, Canada.

• **TRAINEES IN CARDIOVASCULAR RESEARCH:** Applicants are being received for the Cardiovascular Research and Training Program of the departments of physiology and pharmacology, Medical College of Georgia. Program is supported by grants from the American Heart Association, Inc., and the National Heart Institute of the Public Health Service. Salary for one year (July 1, 1957 to June 30, 1958) is \$3800 plus \$350 for each dependent. First class transportation will be provided for trainee but not dependents. Address: Dr. W. F. Hamilton or Dr. R. P. Ahlquist, Medical College of Georgia, Augusta, Ga.

• **SOCIAL AND PREVENTIVE MEDICINE:** Professor required to organize and head department. Excellent opportunity to collaborate in public health development of Saskatchewan. Records of universal hospitalization plan provide valuable research material. This medical school is committed to the study of medical care problems of Saskatchewan. Address: Dean of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

• **BIOCHEMIST:** Ph.D., June 1957, male, married. Responsible research experience in endocrinology, enzymology. Presently engaged in protein research. University teaching experience in zoology, biochemistry. Publications on hormones, enzymes. Special research interest in serum lipoproteins, atherosclerosis. Trained in research administration, physiology, clinical psychology. Desires academic or responsible research position. West preferred, but other locations considered. Address: A-261.

• **NEURO- and MICRO-ANATOMIST:** Desires teaching appointment, South or Atlantic Coast. Fifteen years' experience in conduct of courses. Publications, and textbook currently approaching third edition. Address: A-262.

• **INTERNIST-GASTROENTEROLOGIST:** 40, family. Certified by American Board in internal medicine and in gastroenterology. Six years training, Mayo Clinic and university. Past experience in clinical investigation. Former university faculty member in gastroenterology section. Past two years associated with clinic. Training in internal medicine well-rounded and includes, in addition to gastroenterology, hematology, peripheral vascular diseases and nutrition. Qualified in bone marrow interpretation, gastroscopy and other techniques. Societies. Publications. Desires university appointment. Prepared to organize and head gastroenterology section. Address: A-263.

• **PHYSIOLOGIST-DENTIST:** D.M.D., Ph.D., 43, male. Experienced in conducting physiology course for dental students, and oral physiology course for graduate students, 28 major publications, 16 published reports and abstracts, at present assistant professor of physiology at leading medical school, desires advanced teaching position in dental physiology. Address: A-264

• **BIOPHYSICIST:** Ph.D., interested in senior research-teaching post in physiology or biophysics, including organization and establishment of a department. Address: A-265.

• **BIOCHEMIST:** Ph.D., male, background in physiology and analytical chemistry. Two years teaching experience. Desires teaching post with research opportunity. Address: A-266.

• **PHYSIOLOGIST-PHARMACOLOGIST,** Ph.D., 34, Five years medical school teaching experience, married, 4 children, veteran, Protestant, 13 publications, societies, research interest in Intermediary Metabolism, present rank of

assistant professor. Desires academic appointment. Address: A-267.

• **INTERNIST-FULL TIME CLINICAL TEACHER:** 32, family; Exper: many phases teaching program with medical school, also private and county hospital. Special training in rheumatology, psychiatry and research. Leaving military service in June 1957. Desire opportunity to develop and direct medical education in private hospital, or continue prev. academic career. Address: A-268.

• **ZOOLOGIST:** Ph.D., 1954. General Biology, General Zoology, Embryology, Physiology, Oncology. Desires teaching and research position in basic science school or medical school for 1957. Address: Department of Biology, Brown University, Providence 12, Rhode Island.

• **MICROBIOLOGIST,** Ph.D., strong background in bacterial physiology, biochemistry, and medical bacteriology; interested in academic or full-time research post. Address: A-270.

• **CHEMIST-PHYSIOLOGIST:** Ph.D. in Org. Chemistry, recent M.S. in Physiology. Extensive experience in industrial pharmaceutical research. Publications. Patents. Desire position in medical research in academic institution. Address: A-271.

• **SURGEON:** Several years of cancer surgery. Original clinical research work. Societies. Publications. Languages. Board eligible. Presently holding senior staff position. Desired is preferably a full-time position allowing clinical activities and clinical research. Address: A-272.

• **DIPLOMATE AMERICAN BOARD OF SURGERY-F.A.C.S.** pending, age 32. Additional 1½ years training in cardiovascular surgery and research. Teaching experience at under-graduate and post-graduate levels in cardiovascular and general surgery. Publications. Desires research and teaching position. Available immediately. Address: A-273.

• **PHARMACOLOGIST:** M.D., Ph.D. (in pharmacology); 3 years teaching in a medical school and 7 years pharmacological research experience. Desires teaching and/or research position. Address: A-274.

• **PHYSIOLOGIST-NEUROPHYSIOLOGIST:** Ph.D., 28, Research experience in both peripheral and central nervous system, microelectrode techniques, mechanism of drug action. Teaching experience all phases of physiology. Married, veteran. Desires academic position with opportunity for research. Address: A-275.

• **ANATOMIST:** M.D., Ph.D. Presently Associate Professor but desires change of locale. Teaching experience in microscopic anatomy; research is histo and cytochemistry. Publications. Desires teaching-research or full time research position in medical center in upper mid-west or far west. Address: A-276.

• **JUNE 1957 Ph.D. in Biochemistry and Nutrition.** Research interest in cardio-vascular disease, specifically the amino acid composition of serum lipoproteins from normal and atherosclerotic patients. Teaching experience. Seeks full-time position. Address: A-277.

• **PHYSICIAN (Specialty Pulmonary Dis), Pharmacologist, Physiology-M.D. 1943, D.Sc. 1954 (Dept. Physiol. and Pharmacol).** 3 yrs. Fellow and Instructor Dept. Physiol. and Pharmacol; 3 yrs. Asst. prof. in charge of section on pharmacology, dept. physiol. and pharmacol. and in charge of pulmonary function lab. of polio center associated with medical school. Active research all six years. Position: Teaching, Research, Clinical or Pharmacology. Available summer or fall, 1957. Address: A-278.

• **PHYSICIAN-BIOCHEMIST:** Training in internal medicine, engaged for past seven years in research in experimental diabetes and studies of insulin action. Now completing work for degree of Ph.D. in biochemistry. Desires appointment in department of biochemistry, physiology, medicine, or research medicine.

Available January, 1958 at completion of present fellowship. Address: A-279

• **OBSTETRICIAN GYNACOLOGIST:** Aged 34, 8 years specialty training, Member of Royal College of Obstetricians and Gynecologists, wishes to emigrate to U.S. At present civilian consultant to U.S. Air Force in U.K. Interested in academic post where state licensure not immediately required. Four publications. Address: A-280.

• **INTERMIST, BOARD ELIGIBLE:** charity and university internship and residencies—D.N.B. —married—desires career academic position on medical school faculty—any phase of teaching, administration, research or admitting room supervision. Address: A-281.

• **PHYSIOLOGIST:** Ph.D., male, 35, married. Desires opportunity for research with or without teaching. Six years research experience in circulatory physiology. Teaching experience in medical and graduate physiology. Available September, 1957. Address A-282.

• **PHYSIOLOGIST-ENDOCRINOLOGIST:** Mature, male, Chicago Ph.D. Wide teaching, research, and research directing experience in Human, General, Endocrine, and Behavioral Physiology. Publications. Societies. Desires graduate or medical teaching position with ample time and facilities for research. Will attend Federation meetings. A-283.

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must term him, 'till he becomes a Practitioner, were very few, but well chosen: So few indeed, as to make Dr. Bathurst, the Head of *Trinity-College*, who, notwithstanding his Seniority in the University, kept him Company for his Conversation, stand in a Surprise, and ask, *Where was his Study?* Upon which, pointing to a few Vials, a Skelleton, and an Herbal, he receiv'd for Answer, Sir, *this is Radcliffe's Library.*"

—[PITTS, WM.] Some Memoirs of the Life of John Radcliffe, M.D., 1715 [Anon.]



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